DOMESTIC ENGINEERING

PLUMBING HEATING LIGHTING MILL SUPPLIES

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Substitution

The Seller Our Worst Enemy

By A. R. McGonegal

There was once a time when a plumbing fixture was sold by the manufacturer at a fair price. It was a good fixture and the purchaser was satisfied with it and willing to pay the price asked, but another maker became envious, and instead of making a better fixture he offered a cheaper one, giving the plea that it was unfair to buy all the fixtures from one firm. He knew well that if his substitute was accepted he would get the business on account of the small saving to the contracting firms. His plea was, of course, sucessful and then the first manufacturer promptly found that by cutting a little quality, the omission of testing and adjustment before shipment and using a cheaper grade of finish he could not only meet his competitor's price, but "go him a little better." The second manufacturer retaliated, and then other makers, attracted by the competition, came in and lowered the price still further (and, of course, the quality), a little at a time, until after a lapse of a few years there was little profit to the maker, little quality in the fixture and many long repair bills for the buyer.

Each one of the firms that in turn offered cheaper goods had a hand in killing the business, and each one, acting as he did for the one particular sale, was hurting, not only his competitor's, but his own business in the years to come. And not the least evil of all was the awakening of the buyer to the method of competition that had robbed him of a satisactory article on the flimsy plea each time of a little saving in price, and the seeds of distrust sowed in the buyer's mind.

If you specify Brown & Company's fixtures, Jones & Company will work on the plumber and try to get their goods substituted. If, on the other hand, you mention Jones & Company's goods, Brown & Company will strive to get the sale. And it is a very rare thing indeed that the owner gains by such a deal. There is usually a little more in it for the plumber, and the maker sees that "he gets his," while the poor owner, who has it all to gain or lose, generally does the latter.

There are in Washington today fixtures furnished by several prominent makers (in substitution for good fixtures of other makes), that do not and cannot operate properly or otherwise fill requirements, because they are not mechanically perfected. They were hurriedly made up for the particular purpose of substituting for another maker's mechanically perfected fixture, and the furnishing and sale of them is a shame to the trade and the various makers' business reputation.

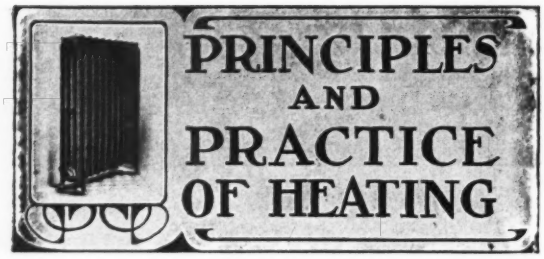
There is a constant striving to conceal net prices; lists of material and fixtures are bid on in a lump, and

Concluded on page 49

Too Good to be True

The mail order houses they say will suspend
And cease all their slashing of price,
Their sending out beautiful pictures will end,
They heed the trade paper's advice;
No more will the farmer be drawn from his plow
The mail order plumbing to view,
For mail order bus'ness is almost dead now—
It seems 'most too good to be true.

Adapted from "Presto."



Progressive Heating—VI*

EDITED BY JNO. K. ALLEN

Associate Member American Society of Heating and Ventilating Engineers, Member American Society of Inspectors of Plumbing and Sanitary Engineers, Member Royal Sanitary Institute of Great Britain.

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The foregoing rate of combustion and evaporative power are for free burning boilers; that is, boilers with a moderate fire travel through the flues and with a proportion of not less than 60% of direct fire surface. Boilers constructed with bridge walls, diving flues, and long fire travel, will not burn fuel at a rate exceeding 7 lbs. per square foot of grate per hour, and the evaporative power will also be somewhat lower—say 8 lbs.

The quantity of steam radiation per square foot of grate for such boilers is $\frac{7 \times 8}{0.25} = 224$ square feet.

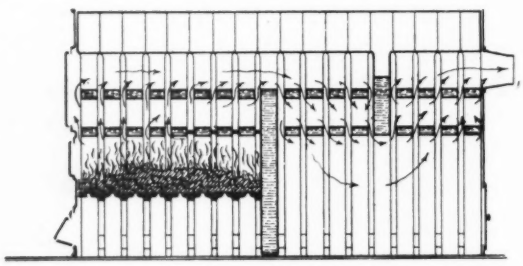

Fig. 4.

The quantity of steam radiation which a boiler of this type, containing 15 square feet of grate, will carry is 15x224, or 3360 square feet. For water radiation, multiply the grate by 370; thus, 15x370= 5550 square feet.

*Previous installments of this series of articles were published in the issues of April 11 and 25, May 9, June 27, and August 15. These numbers can be obtained for 10 cents a copy.

For water radiation multiply the grate by 370; thus, 15x370=5550 square feet.

Fig. 4 represents a large steam boiler consisting of 18 sections, 9 of which are back of the bridgewall. The grate area is 20 square feet, the heating surface 800 square feet, and the steam rating of this boiler, taken from the manufacturers' catalogue, is 8000 square feet of radiation. The proportions are: 1 square foot of grate to 40 square feet of heating surface; 1 square foot of heating surface to 10 square feet of radiation; but to carry 8000 square feet of radiation, this boiler must burn hard coal at the rate of 12 lbs. per square foot of grate per hour, and each pound of coal burned must evaporate 8.5 lbs. of water.

For a boiler of the proportions described, the rate of combustion will not exceed 7 lbs., and the

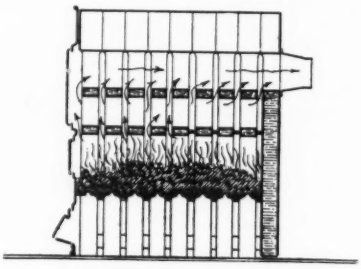

Fig. 5.

evaporative power will not be more than 8 lbs. The true working capacity of this boiler then, per square foot of grate, is $\frac{7 \times 8}{0.25} = 224$ square feet, and twenty square feet of grate times 224 gives 4480 square feet of radiation, instead of 8000 square feet.

Cut the boiler in two, and the nine grate sections left, which are shown in Fig. 5, will do more work than will the eighteen sections with the bridgewall. The approximate proportions of the nine section boiler are: 1 square foot of grate to 20 square feet of heating surface; 1 square foot of heating surface to 13.6 square feet of radiation.

The combustion rate of this short boiler is 8 lbs., and the evaporative power 8.5. The capacity in steam radiation, per sq. ft. of grate is $\frac{8 \times 25}{0.25} = 272$ sq. ft., and 20 sq. ft. of grate multiplied by 272 gives 5440 sq. ft.—a capacity 21% greater than the boiler with eighteen sections.

(To be continued. All rights of republication reserved.)

The Domestic Engineer in Cuba

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The domestic engineer of Cuba has a great deal of work to do in the line of acetylene gas installations. Almost every plumbing and gas fitting shop is fitted up with the necessary apparatus to work with carbide gas generators and piping systems for conveying the gas to the various points of ignition. The industry is a flourishing one. There are more acetylene lights burning in the homes of Cuba, in proportion to other manner of lights, than in any country in this part of the world. A very large proportion of the public buildings, private dwelling houses, stores, shops and various plants are lighted exclusively by the light obtained by utilizing carbide in connection with water in generators. The result is that the gas fitters and plumbers are almost always quite busy with the systems.

The general plan by which acetylene gas is used in Cuba involves the establishment of a separate building of small dimensions, erected like that shown in Fig. 1. The building is often built entirely of brick or native stone. The builders seek for ornamentation. Sheet metal roofs are usually employed. The little square structure is made just large enough to contain the gas generating outfit. The tank and various fixtures are installed within the building on a proper brick foundation. The necessary piping is put in to carry water from the mains to the tank for water in the machine. There is a drip attached for conveying off the surplus slush of the generator. On the opposite side of the building the gas main is attached, and through this pipe the gas is carried to the distributing lines.

Fig. 1.

Pipes carrying water, gas, slush, etc., are almost always exposed. There is no inducement or necessity to protect the piping with earth to avoid freezing, as the freezing point is never reached in this mild climate. Hence the pipe men have this advantage, that they can run their lines along the side of a building or on the ground, the most common practice being to place the line along a ridge on the masonry of the building foundation, as shown in Fig. 2.

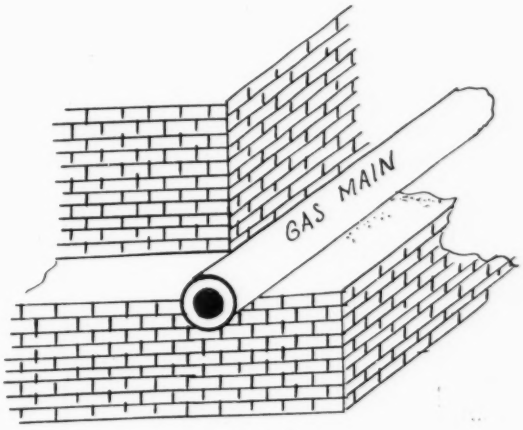


Fig. 2.

The gas fitting engineer of Cuba finds that he has a few problems to solve when it comes to putting in the lines of distributing pipes in a way which shall satisfy the proprietor of the building. In this land there seems to be no thought taken of gas economy. Every householder and store man seems to seek to burn all the gas he can. There are gas jets put up on the porches, and strung along outside on the fence posts. There are gas jets burned in front of show windows and back of show windows. Even the unoccupied upper rooms of dwellings are often freely lighted. Usually a few colored light windows are put in and the lights which burn back of these colored glasses reflect through and make a pleasing demonstration of varied colors. There are lights put up in the gardens of the people. The hostess is fascinated if she can show her visitors through a garden at night, lighted with acetylene jets burning on posts. Carbide gas jets burn liberally in the hot houses at night, for the purpose of making the plants grow. A man told me that he fooled the plant life into thicking by that method and obtained a double growth of the flowers and

vegetables in his hot house. That is, he believed that the plants grew only during the light of the day. Therefore he decided to turn the night into day by using the white lights of the carbide gas fixtures.

There are lights used for the workmen who toil in the night, because some of the natives choose to labor during the cool hours of the night in open

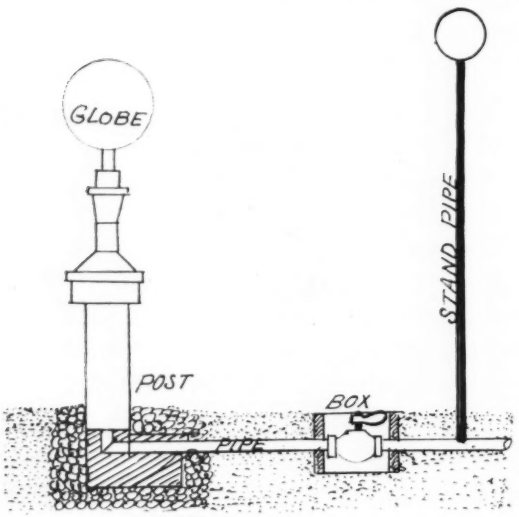


Fig. 3.

space, as in quarries, thereby avoiding the heat of the sun.

The work of the domestic engineer comes in on the plumbing for the water supply and the draining of the slum of the gas generators. The work also often extends to the installing of the gas pipes and light stands. I know that many of the men who opened sanitary plumbing shops here have taken up the gas pipe division of the business as a side line, because of the money in it and the constant demand upon pipe fitters of all kinds to do this work. Some steam fitters of Havana tell me that they have to be in readiness to do work on acetylene gas plants at short notice when called upon to do so.

In the next illustrations we exhibit some of the systems of installing the lights. Fig. 3 shows one of the popular methods of installing for exterior lights. One light may be on the porch to light the entrance to the interior door, and the other may be at the steps.

The porches are always very wide and spacious in this country and difficulty is experienced in arranging the lamps so that the roofing will not act as a shade and prevent the spreading of the rays of the light from the jet. Stand pipes come in very handy for this service. The main is carried underground, as illustrated, and left exposed at the cock, where the latter is boxed. Often the pipe is placed on top of the ground. It is better to give it some protection with a thin covering of earth, as shown. Then from this main, which extends along the way, the uprights can be formed and the gas carried to any elevation desired and at stated intervals. Often the globes which are employed are manufactured of colored glass.

In Fig. 4 is shown one of the systems employed for lighting the entrance to a porch which has sides to it. The pipes are run along the roof inside and the drop is made at the point where it is decided to attach the fixture for the burner.

Acetylene gas is not costly. Carbide sells for $4.60, U. S. currency, per 100 pounds. There are some gas manufacturing plants here and also an electrical power system for furnishing electrical arc and incandescent lights in Havana and surrounding towns. But the carbide is cheaper, the system is simple and many of the residences and stores are lighted by this agency.

Usually the gas generating house is set up in the back yard. It is seldom that the tank is set in the

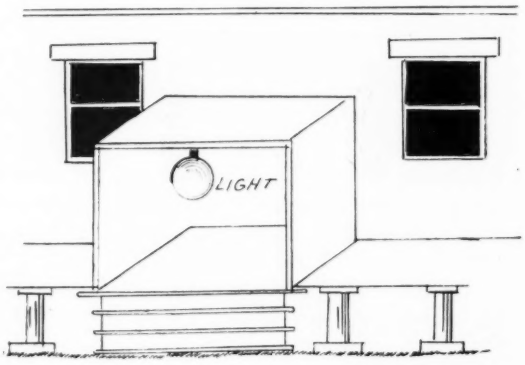
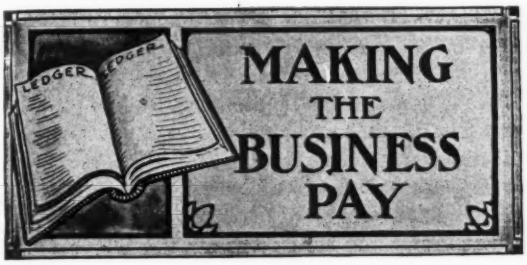


Fig. 4.

building at any point. The natives come around and buy the waste slush of the tanks and use this in painting buildings. A little lime is added and a very substantial material between whitewash and calcimine results.

All the domestic engineers add to their revenue by working at the acetylene gas plants at private homes and in stores and mills.



Letters from a Retired Successful Plumber and Steamfitter to His Nephew, Still in Business

X*

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WHAT THE RIGHT ESTIMATE DOES FOR BUSINESS.

Dear Jim:—

I will always have a warm spot in my heart for Jake Peterson. About fifteen years ago he drifted into the shop at Colton with a more or less bulky roll under his arm.

"Where you going, Jake," I said, "and what in the world are you taking with you?"

"Going out for business. Going to get it, too, for I've got estimates and drawings here that'll land it; see if they don't."

I am free to confess that I indulged in a little good-natured ridicule when I found out the size of the job Jake had been asked to figure on, and saw the estimates and drawings with which he was armed. Something like hunting a gnat with a battleship. It seemed that Dave Burroughs wanted to heat up his basement so that he could do some work down there. Had a lot of space going to waste and thought if he'd put in a little heat it might be used for something besides a storeroom.

Jake had figured out two or three heating schemes for the basement, but he wasn't satisfied with that; not Jake. He had plans for heating the entire store, from basement to garret, with a choice of two good systems. Burroughs had figured on spending about thirty-five dollars, but Jake had plans running into big money.

Jake and I always exchanged information, anyhow, and Burroughs was a man I never could do business with, so when Jake installed a three hundred and fifty dollar system instead of the pesky little job that Burroughs had asked about I pumped Jake nearly dry as to how he did it.

"Well," Jake said, "you can't turn a man's mind to business when he can't see what he is going to get. Once you get your man interested it doesn't take any longer to talk big business than it does small business. Takes an estimate and plans right by you to get the business, and get it at the right price.

"Getting the business, of course, has to come first, but you've got to have figured prices—have 'em ready for anything that comes up."

That set me to thinking. I'd always rather prided myself on my intuition—"bone feeling"—my ability to guess a job just as close as the next man. I'd never been much in favor of just getting in under the other fellow either. I made a good guess right out of my head and stuck to it. If I thought I made money on the job I felt pretty good over it; if I lost money I figured that I'd get it out of the customer next whack. But Jake's success on the Burroughs job sort of upset my methods—or rather lack of methods. I learned that a good estimate is the plumber's best friend. It's so now more than it was then. The day of the man in any line who trusts to rapid intuition instead of slow figures is past and gone.

Next to the man who doesn't estimate at all is the man who doesn't get everything in. That happens in other lines than ours. A country firm wrote in to a number of Chicago contractors, requesting figures on a building. One of the contractors submitted an estimate very much lower than the rest. Knowing that the firm was a reliable one the contract was let to them. After a short time the contracting firm requested a release. In estimating they had forgotten to figure in the roof.

Now, any plumber or steam fitter, no matter how good, is liable to make that mistake unless he has some automatic means of preventing it. A good estimate blank—which blank you can get of your publisher—is so arranged that nothing of this kind can happen. Not a single fitting will be left out if you've a good, comprehensive estimate blank on which to do your figuring.

Here's one place that I learned it pays not to scrimp—on estimate blanks. Have a lot on hand—always handy. Then, whenever there's a job in sight—even though it may be a year or two ahead—be the first man on the ground with your "preliminary estimate." Suppose you hear Jones is going to build; you don't blunder after Jones and tell him that you want the job and can do it cheaper than anyone else; you leave that hackneyed talk for your competitor. Your plan of using a preliminary estimate is better—more businesslike, for it will get the business eight times out of ten.

*Previous letters in this interesting and instructive series were published in the issues of May 23, June 6 and 27, July 11 and 25, August 8 and 22, September 12 and 26. These back numbers can be obtained for 10 cents a copy.

Except where asked to bid out and out on a job, you handle it this way: Get your man where you can visit uninterruptedly with him for a while. Then make a rough sketch of the prospective job—get him to make it for you if possible—then talk interestingly about the different kinds of jobs you could put in. Feel him out and see where his inclinations seem to be and, on the rough sketch, figure out what the contract will cost.

More men get scared and back out of building when they look over a formal estimate than at any other time in the building game. Why? Because there is something about cold, formal figures that repel. An estimate focuses all the disadvantages and tends to obscure the advantages of a plumbing and heating system. The prospective buyer forgets the comforts that will accrue—sees in his mind's eye only the good, hard dollars that he has to let go. That's why you don't want to flash the formal, final estimate until his mind is fully—thoroughly—made up.

When there's a chance to estimate, then, don't be backward about being there with the goods. Estimate early and often. Don't fear "free work"—time spent on an estimate isn't lost even if you don't land the job. When you finish up an estimate—granted you haven't scamped it—you've had to do considerable research work. You have tested your practical knowledge. You have been made to feel your strong points and you have smoked out your weak ones. If you are inclined to be sanguine, there is nothing like an estimate—the cold hard figures staring you in the face—to take that over-sanguineness out of your system. If you're inclined to be afraid, there's nothing like an estimate to reassure you, as you put together the parts and figures in your mind, and find again that the biggest job is made of nothing but small parts, each of which you are perfectly familiar with.

I told you a letter before this how the Star A man got me to sorting my cost records so as to use them as a basis. And right here's where cost-keeping dovetails into estimating—not only are the cost-keeping records of use, but the habits of thought you form when determining your costs help you vastly when you go to estimate. The cost records act as a safety-valve on loose estimates—for every time you run through your cost sheets you'll make a better estimate for it.

In making the formal estimate there are a large number of methods at present prevailing in the craft. The items are, of course, fixtures, labor and profit. That gives a variety of ways that the three may be combined, and worked into the estimate.

Right here, Jim, I'm going to own up to a bit of pride. As long as it doesn't harm anybody I guess it will be all right. But when I saw how many ways there were of figuring up those three items—fixtures, labor and profit—I made up a table showing the principal ways, and got so I could make up an estimate according to any of the four plans. Then I found that one of these plans gave me the best satisfaction and most accuracy.

But here's the table:

THE JOHN BURTON TABLE OF ESTIMATING METHODS.

In an estimate there are three factors to be considered: Fixtures, Labor and Profit.

Method 1.—List Fixtures at cost, Labor at cost and add Profit. Total gives estimated Cost.

Method 2.—List Fixtures at cost, add a percentage for profit to Labor.

Method 3.—List Fixtures at cost plus a reasonable profit; figure Labor at a reasonable profit.

Method 4.—List Fixtures at cost plus a profit, Labor at cost plus a profit. List a third item, a certain per cent of the combined cost of Fixtures and Labor as Profit.

There's meat, Jim, meat for a lot of thought and study. Don't make the mistake of thinking that it's too much theory for you to wade through, either. Some time when your mind is feeling as supple as a piece of spring steel, take a little time and figure out an estimate according to the four plans above and see what it shows you. You'll learn more of the differences between them than by reading a thousand words of description.

You wrote me how you got fooled on that off-hand estimate of Bishop's. Well, that same subject puzzles a lot of us—the matter of off-hand estimates.

THE RULING PASSION.

The Late Comer (anxiously): "How far have they got with the program?"

Major Stymie (an ardent golfer): "Seven up and two to play."—The Sketch.

You meet Smith or Jones some time, perhaps at lodge, or anywhere well away from the shop. He asks you the price on a certain job. Of course if it is a job of steam heating you can ask him the number of rooms, and tell him that on an eight-room house the cost will be somewhere between forty and fifty dollars per room.

So you can make him a pretty close estimate on that basis. But if it's a different class of work from that, your salvation lies in the time you've spent over your estimates. If you have made a lot of estimates in your time—whether they've all landed jobs or not—you're in pretty good shape to answer any question that may be sent your way.

Then in a town the size of Colton you ought to be pretty well familiar with the "physical hazard," as an insurance man would call it, of every building. It wouldn't do you any harm some stormy afternoon in the winter time to set down and rough draft up the plans of every building in Colton that you know needs any plumbing or steam fitting. It certainly would flatter a man's vanity a good deal to tell him that you had been doing a little figuring on his job in your own mind. That man would know that you didn't rate him among the dead beats or undesirable citizens at any rate, and a man is always pleased to think that a good, square business man is after his business.

One of the strong points of estimating is that it helps to insure that future work will come to you. Always keep the owner of the building reminded that a part of your office records is made up of descriptions and detail plans showing the plumbing and steam fitting of his premises. When he puts on an addition—as he is bound to do in a growing town like Colton—you'll probably be the man to get the job. Then if he sells, be Johnny on the spot to let the new man know that you are the lad who did the good work on the building, and who, having a set of plans and estimates already made, is best prepared to take care of it. Always take the old estimates and plans along with you. The owner may, and probably will, have some new ideas about things that may put money in your pocket.

And just one other thing: Bend every energy towards getting an estimate that looks good—that makes a good appearance. When your prospective customer sees your papers and drawings, neat, businesslike, carefully figured—reflecting in smallest detail the man behind them—you've made your first good impression.

Yours for the business-getting estimate.

John Burton.

Sterile Drinking Water for Large Buildings*

By Thomas N. Thomson, Sanitary Engineer, Scranton, Pa.

Member A. S. I. P. S. E.

THE problem of an absolutely safe and reasonably pure supply of water for drinking purposes in buildings, is, in my opinion, one of the subjects that demand special attention and investigation by sanitary engineers. I do not think we go far enough, at times, in our attempts to furnish an absolutely safe supply of drinking water. We are inclined to feel quite satisfied when we have installed, and turned over to the tender mercy of an engineer or janitor, some devices which strain from the water enough of the visible impurities to render it clear and appetizing. But do we, with these devices, always remove from the water those impurities which are considered by health officials and the medical profession in general, to be the greatest source of danger in drinking water?

It is a fact, beyond dispute, that the water contained in storage reservoirs is teeming with bacteria and low forms of life, the numbers and kinds no doubt changing with the seasons of the year and the condition of the surface of the land over which the rain water or melted snow flows down to the reservoirs. And it is a fact that the water in many reservoirs is so repugnant in appearance or odor that but few people would drink directly from them with a cup. Yet this same water is allowed to flow through underground pipes to buildings, and is freely consumed there as an essential element in the lives of the people. Innumerable micro-organisms are thus admitted to the stomachs of human beings and play their own important parts in the production of intestinal diseases, such as typhoid fever, etc.

It is not necessary for me to prove to you that drinking water which is free from pathogenic germs is a necessity for the healthful condition of human beings, and particularly for those who are freely expending their vital energies in the offices and commercial buildings of our great cities; I will simply quote the following remarks of Dr. W. E. Musgrave of the Bureau of U. S. Government Laboratories, who for some years

*Read at the third annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, held in Chicago on February 10-12, 1908.

past has made a special study of this subject: "It causes more than 50% of the invalidism of public servants; it must be reckoned within the profit and loss accounts of business enterprises; and it enters into consideration in military movements; it numbers among its victims all ages, all classes, and all races."

I think it is quite safe to add that impure drinking water by devitalizing the population decreases to a large extent its capacity to perform useful work, and furthermore that the purification of drinking water is a matter of national economics. Quoting from a spirited writer in "The International Medical Magazine," in which he tries to show that water is responsible for far more sickness than is ordinarily supposed, I present the following extract: "If some fierce, barbaric horde, like the Goths and Vandals of old, were in the habit of swooping down every year upon the civilized regions of North America, killing our people by tens of thousands and wounding from 50,000 to 100,000 more, all for the lack of adequate defences which would cost a few beggarly millions of dollars, what a howl of indignation there would be." These enormous figures are used by this writer in reference to typhoid fever only, and take no cognizance of the far greater number of sicknesses, such as dysentery and other enteric disorders which probably are causing a greater loss in dollars and cents, to the country than typhoid fever.

Probably the strongest proof I can present and one that should wake up sanitary engineers and health officials to a realization of the fact that our country is suffering enormous losses every year through preventable diseases, is a brief resume from the 1906 Typhoid Statistics.

In Pennsylvania alone 3,917 deaths occurred from typhoid fever. This represents approximately 40,000 cases, as about 10% of the victims usually die from this disease. Suppose the value of each person to the community be $2,000, then 3,917 deaths represent a loss of $7,834,000. Add to this 40,000 cases each costing say $100 in time lost, medicine, nursing, medical attendance, etc., which amounts to $4,000,000; then the money loss alone to Pennsylvania caused by the ravages of typhoid fever equals $11,834,000 for one year. All, or nearly all, of this loss is due to filth and particularly to contaminated water. The other states of the Union have their own gruesome records along this line.

If such facts as these do not enthuse sanitary engineers toward a high sense of their duty to mankind, then as real sanitary engineers they become a farce, for is it not a fact that a sanitary engineer is an engineer who designs and constructs contrivances for the prevention of disease and the preservation of public health? A so-called sanitary engineer who does not make a special study of all things of an engineering character which relate to the prevention of disease, but simply grinds out plans and specifications for plumbing and sewerage work is not a genuine sanitary engineer; he is simply a plumbing engineer, or sewerage engineer, and should be known as such. But a sanitary engineer who really loves his profession, and responds to the call of the country for his best services in the preservation of the health of its people, is a man who not only is a genuine sanitary engineer but also a citizen of the most valuable type. I believe the late Col. Waring was a man of this class, and we need more like him now.

The drinking water question is, without doubt, one that is urgent and should receive prompt attention by genuine sanitary engineers and health authorities.

Nobody can doubt the necessity for purification of drinking waters that come from reservoirs fed from watersheds.

There are several methods for purifying drinking water, such as precipitation, filtration, chemical treatment, distillation and boiling, and of all these there is none so safe as boiling. This is recognized all the world over as a perfect and positive safeguard. When an epidemic of typhoid, for example, ravages a town, an order comes from the Bureau of Health to boil all drinking water, milk and other suspected food stuffs. When this order is faithfully responded to by the people, the epidemic quickly dies out. You never heard a genuine experienced health officer issue such an order with a privilege to those who have filters in their homes. No—the order goes out to rich and poor, high and low, drinkers of filtered and unfiltered water, all alike. There

Papa Crow: "Hm! Mistakes will happen in the best regulated families."—Life.

is no allowance made for your own private filtration plant; it is all the same to the Board of Health. You must boil your drinking water or become an enemy to the public weal. Boil the water is the cry of the whole civilized world wherever an epidemic exists and the water supply is suspected. The idea really is not new with us, it was practiced by the ancient peoples of the east. It is recorded that they boiled their drinking water always during certain epidemics with very beneficial results.

The question may here arise, what is the matter with the modern filters which make the water clear as crystal and on test show anywhere from 90% to 98% of the bacteria removed from the water by the filters? The answer is simply that they have their field of usefulness in the clarification of water, but they cannot be depended upon for the entire removal of bacteria from the water. Indeed, some filters are really propagating beds for bacteria; they may clarify the water with a high degree of efficiency, and yet not hold back the very germs that are so dangerous and disastrous to mankind.

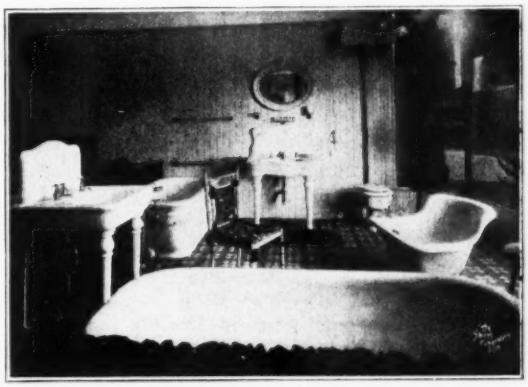
As an example of this fact I will quote from a report of the Maryland State Board of Health on a case, where, to be doubly sure, the proprietor of a house in Baltimore installed two filters, a large one through which all the water supply of the house was passed, and the other a small one of the so-called germ proof variety through which the water used for drinking purposes was passed, after it had already passed through the larger filter. The report says: "A test of this arrangement showed that on a day when the city taps were running 510 bacteria to the cubic centimeter, the large filter was delivering some 9,900 bacteria in the same water. When the large filter was repacked only 9 bacteria per cubic centimeter got through it, though this same water in turn when passed through the small filter came out with 71 bacteria per cubic centimeter."

Filters are considered to be working to perfection when they remove 98% of the bacteria, but this is seldom accomplished, and even then for only a short space of time. Ninety-eight (98) per cent when considered by itself seems a high efficiency, but when it is 98% of bacteria, the other 2% becomes an interesting proposition in large numbers. Bacteria possess the property of propagating very rapidly. M. de Freudenrich, of the Berne laboratory, asserts that milk just drawn, containing 9,000 bacteria per cubic centimeter, seven hours later was found to contain 60,000 bacteria per cubic centimeter. After a period of twenty-five hours had elapsed 5,000,000 bacteria were present in the same quantity of the same milk, and he further states that if the temperature of the milk be raised to 95% Fahr., the bacterial population of the same milk would reach the enormous number of 812,500,000 per cubic centimeter.

It is quite evident, therefore, that even if a filter be 98% bacterially efficient, the remaining 2% passing into the pipes with the filtered water, may, under favorable conditions, become uncountable, and especially when the 2% may mean thousands to start with. What results can be expected from such a filter as the one mentioned in Baltimore. One of the greatest living authorities on water purification and hygiene, M. Ed. Bonjean, Chief of the Laboratory of the Consulting Committee of Public Hygiene of France, remarks: "Unhappily the filters are as yet far from fulfilling their promise and as they actually work at present, we, personally, consider them more dangerous than useful."

Even the most widely experienced and probably best known of our Sanitary Engineers in the United States have but little confidence in filters when they are required to intercept the colon bacilli or other pathogenic germs that are suspected or known to be in a water supply. For instance, Wm. Paul Gerhard in his book entitled "Sanitary Engineering" says on Page 107: "It is better, however, to avoid during epidemics the use of filters, and make it a practice to boil all water used for drinking purposes."

Does this not mean that his experience has



Window display of solid porcelain ware in the modern establishment of the Barnes-Stephens Plumbing & Heating Company, at Colorado Springs, Colo.

taught him that even although filters will clarify water and make it apparently pure, yet the pathogenic germs may not be removed from the filtered water?

These few facts are given about filters in an effort to put the filter in its true position. It is not desired to criticise or belittle filters for they are most useful and efficient as clarifiers of water, and it is my aim to place the filter in this category. It is not wise to expect from them what they are ordinarily advertised to do. In other words, commercialism has perpetrated a great wrong against filters. They are now and will remain necessities as long as clear water is desirable, and filters of a good type should be more abundantly used than they are at present, but the germ-proof idea should be removed from them.

Any water that is contaminated with disease germs must be made sterile before it can be considered fit for entrance into the human body. By sterile, I mean that all pathogenic germs must be killed. This can be accomplished either by chemicals or by heat. By adding chemicals, however, the chemical composition of the water is changed perhaps to such an extent as to be absolutely unfit for human nourishment. By a judicious application of heat, however, the germs can positively all be killed, while the composition of the water remains unchanged. There are two common methods by which germ laden water is made sterile by heat: One is that in which the water is boiled in one vessel, and the steam is condensed in another vessel. This is the process used by chemists and by certain manufacturers to obtain, not only absolutely sterile water, but also chemically pure water. As far as medicine and surgery are concerned, where the liquid is required in comparatively small quantities, this probably is the ideal process. But where the public as a body are concerned the distillation process, in my opinion, is impracticable and undesirable. It is impracticable because of the cost and necessary attention, and undesirable because of the radical change which is produced in the chemical composition of the water.

The other common method of sterilization is to boil the water. This simple plan has been handed down through generations from the Dark Ages to the present time. During all these centuries it has never failed. And it is so extremely simple that we marvel how ingenious man has not before now devised some inexpensive apparatus that will operate automatically and be absolutely safe in supplying perfectly sterile water for the drink and food of the masses. And furthermore it seems rational to suppose that of all men the sanitary engineers of America are the men who should give this matter the careful study and investigation which the subject seems to merit. I do not mean that filters should be discarded and sterilizers used instead, but I do mean to infer that there are many, many towns where sterilizers should be installed in addition to filters in at least all schools and large buildings.

Having presented my opinions regarding the necessity of a more safe supply of drinking water than is at present obtained from many sources, I will now proceed to describe a process whereby complete sterilization can be secured at a cost that is too small to be worth serious consideration, but before doing so I will try to illustrate briefly the fundamental principles and essential requirements of safe and satisfactory sterilizers. In the first place they should be made of copper or brass, preferably the former, in order to insure durability as well as a rapid conduction of heat to the drinking water, and all surfaces in contact with the water should be surfaced with block tin. Second, they must be so constructed that each drop of the drinking water which passes through them must be raised to the boiling point before it is allowed to cool, for it has been proved by bacteriologists and other scientists that even the most tenacious germs, such as the true typhoid species, are killed at a temperature of about 212° F. even though they be subjected to this temperature but an instant. Third, the construction of the sterilizer must be such that at no time and under no circumstances will it be possible for a drop of water to pass through the sterilizer that has not been raised to the boiling point in the sterilizer. Fourth, there must be no communication whatever between that chamber of the sterilizer which contains the sterile water and the chamber which contains the water to be sterilized should the source of heat fail. Fifth, when the source of heat begins to wane, the flow of water through the sterilizer must instantly be stopped automatically but not by the action of valves or other mechanical contrivances which are liable to fail in their operation. And sixth, the device must be reasonably cheap to install, and cost but little for steam or gas heat, and must operate without attention in an absolutely safe and perfect manner.

To be continued.

Questions and Answers

AMOUNT OF HOT WATER RADIATION REQUIRED.

New York, N. Y.—To the Editor of "Domestic Engineering." Sir:—I am sending you a blue print of the plan of my house, in which I wish to install a hot water heating plant to replace a hot air plant. If you can do so without too much trouble I wish you would let me know the amount in square feet of hot water radiation required in each room and hall, except kitchen and pantry, also sizes of mains, risers and connections and the capacity of the hot water boiler required.

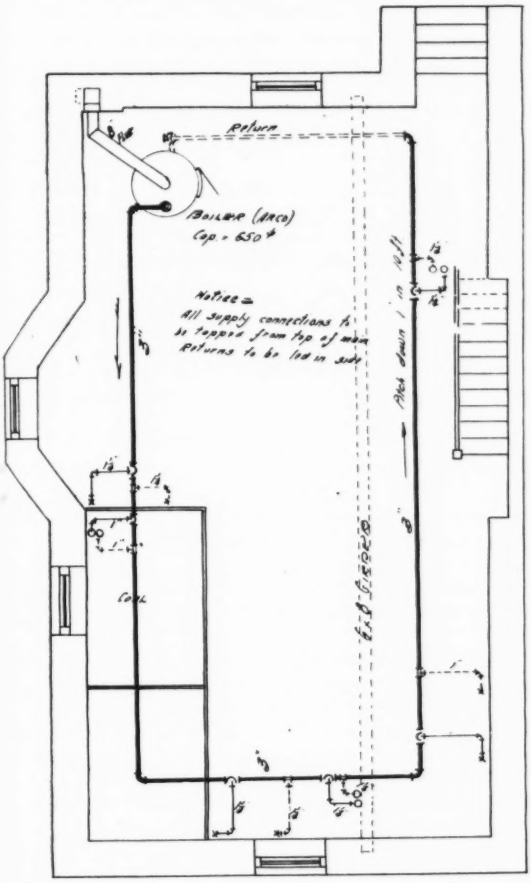


Fig. 1. Cellar plan for the heating of L. L.'s residence.

The sizes of the windows are as follows: In parlor on first floor, two windows, 6 feet by 2 feet and 7 inches. Dining room has one window, 6 feet by 2 feet 7 inches, and two windows 6x2 feet. The dimensions of the windows on the second floor are: In front hall room, one window, 5 feet 6 inches by 2 feet 7 inches; front bed room, one window, 5 feet 6 inches by 2 feet 7 inches, and two windows, 5 feet 6 inches by 2 feet 5 inches; middle bed room, one window, 5 feet 6 inches by 2 feet 7 inches, and two windows, 5 feet 6 inches by 2 feet; rear room, two windows, 5 feet 6 inches by 2 feet 7 inches; and finally one window in the bath room, 4 feet by 2 feet 7 inches.

I have tried to estimate the radiation required for each room by the application of Baldwin's rule and also by the rule published in "Domestic Engineering" of

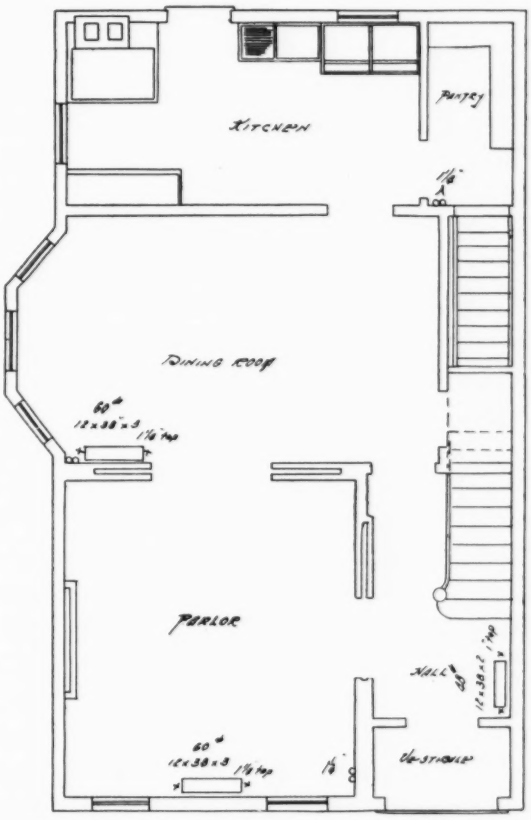


Fig. 2. First floor plan for hot water heating system in L. L.'s residence.

May 9 and June 27, 1908, and obtained such widely different results that I am very much in doubt. As I desire to install an economical plant I hope you will lend me a helping hand. Yours very truly, **L. L.**

Answer.

The four plates herewith shown will give you a plan for the hot water heating of your residence based on the one-pipe principle. You will require a round boiler of a capacity of 650 square feet. Starting at the boiler with a 3-inch main as the high point, run the same around the basement, pitching down about one inch in ten feet, and return back to the boiler. The connections to the radiators should be taken off of the top and returned into the side of the main. The risers feeding the second floor radiators are shown very clearly. The expansion tank should be fed from the 1¼-inch feed riser through chamber No. 1, reducing to one inch for the expansion tank connection. The overflow is one inch and should be run into the drain

pipe in the bath room, expansion tank being hung to the ceiling.

This arrangement will give a temperature of 70 degrees throughout the building in such rooms where radiators are placed when the temperature outside is zero.

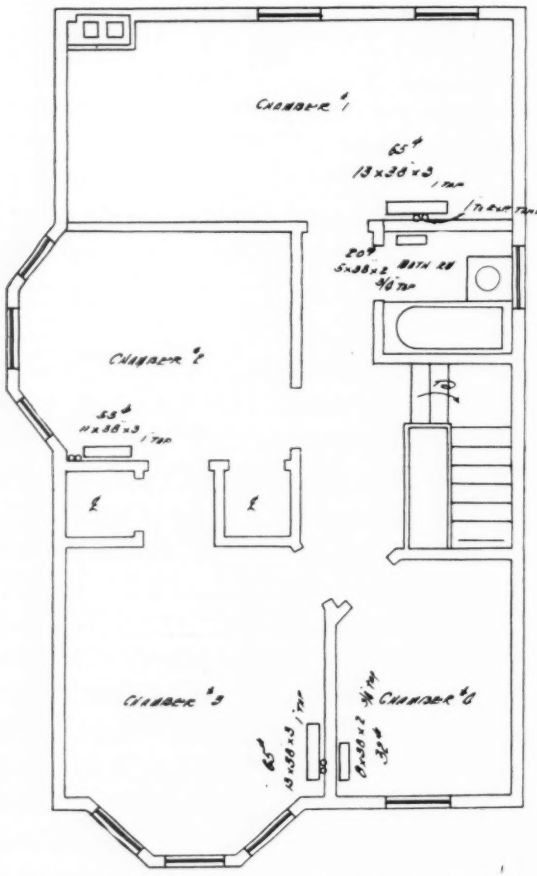


Fig. 3. Second floor plan for hot water heating in L. L.'s residence.

THINKS MANUFACTURERS SHOULD ADVERTISE IN TRADE PAPERS ONLY.

Hollidaysburg, Pa.—To the Editor of "Domestic Engineering." Sir:—I have been following up a number of your articles on plumbers not quoting customers who want articles they see advertised in magazines and papers which do not have any bearing on the trade. In my judgment these plumbers are absolutely right. The following reasons will bear on the case: All plumbers know that some of the best lines of goods manufactured at the present day are not boldly or otherwise advertised in the magazines or any papers but the regular trade papers. Furthermore, every reliable plumber can always get the best from the manufacturer if he wants it. Not a great while ago a citizen came into my place of business and wanted a certain closet bowl he had read about in some paper other than the trade paper. I said: "Mr. H., get something good from one of the best and oldest firms in the country." Mr. H. says: "What is it, Mr. Shatzer?" Then Shatzer got busy and the sale was made, and the closet from one of the houses that can put up the stuff was sold. I do not believe manufacturers should send out cheap literature to prospective buyers, for the reason that this same manufacturer always has a favorite in the business and will naturally refer the prospective customer to his favorite. This I know to be a fact, not only in one instance, but in a dozen. I think that advertising outside of trade papers is the cause of more trouble and annoyance than any one thing that the present day plumber has ever run against. Let the plumber alone. Do not antagonize him with a lot of cheap advertising outside of the regular trade papers, and he will feel better, do better and sleep better and be better to the world in general.

Joseph T. Shatzer.

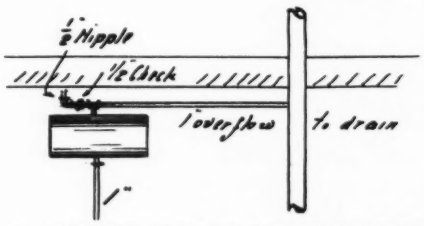


Fig. 4. Showing arrangement of expansion tank (14x30 inches, 20 gallons), in proposed plan for heating L. L.'s residence.

In Early Days—VII

By Herbert S. Renton

"A few gentlemen may be accommodated with board and lodging at this pleasant and healthy situation a few doors from the state prison. The Greenwich stage passes from this to Federal hall and returns five times a day." This advertisement of the Greenwich Hotel appeared in "The Columbian," September 18, 1811, and is one of the windows through which we may look at old New York when Aaron Burr's Manhattan Water Company was young. For thirty years the prison stood at the foot of Amos street, now West Tenth street. A brewery occupied the site afterwards. The prisoners were not removed to Sing Sing until 1828.

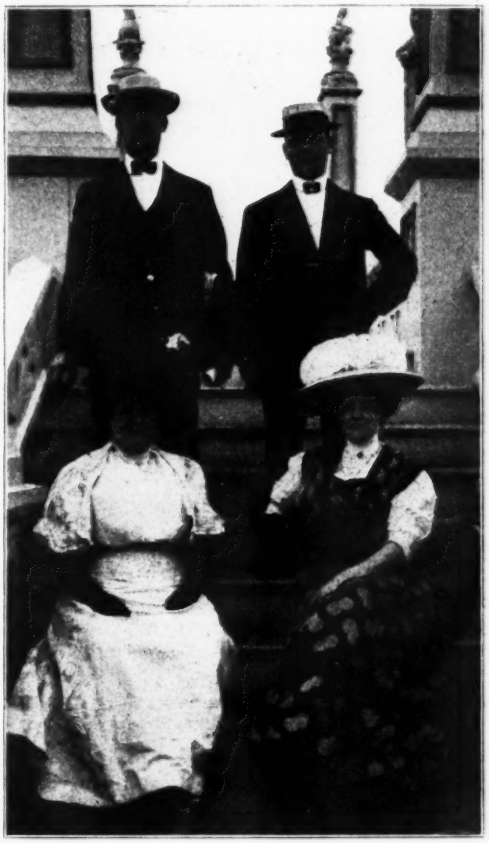
When residents of Greenwich village went to town they sent a messenger to have the stage call at the travelers' door for them. The fare was 25 cents each way—distance to the Battery three miles—and the coming of the coach was announced by resonant blasts upon a horn. An old lady would say to her boy: "Now, Dan, run 'round to Asa's" (Asa Hull, proprietor), "and tell 'em to send the eight o'clock stage here." Yellow fever came to New York quite often in those days before sanitary plumbing, and the striken denizens fled for refuge to Greenwich village, where Yellow Jack rarely followed. In those unsanitary times the city was swept by many plagues. Fanny Kemble, who came to New York in 1832 with her father to act at the Park Theater, found the city prostrated under the visitation

of cholera; 1832 was the year when this dread plague stalked all over the world, as related so vividly in Eugene Sue's "Wandering Jew." It was a new disease, and, though virulent, was not of long duration. In the eighties I knew John Butcher, a plumber in Water street, who was one of the first of the craft and who detailed to me the awful scenes of terror that attended the cholera's first visitation before water was "laid on" and when the city depended on wells and pumps, and the only main was a wooden one supplied with water from the wooden tank described in a former number of "Domestic Engineering." John Butcher told me that New York was almost depopulated but if the plumber had been abroad in the land in 1832 no such epidemic as cholera could have been possible. I have talked with a number of the original members of the plumbing guild, but none remembered '32 except John Butcher.

Alfred Ivers in the eighties claimed to be the Nestor of the trade, and Tim Brien, of Bleecker street, was another of the early birds. The cholera started the Gothamites to thought and action. In 1835 the Croton acqueduct project was approved by popular vote. The great reservoir was completed and opened October 14, 1842, with the greatest celebration ever known on Manhattan Island till then. All the militia and firemen—Philadelphia and Brooklyn firemen (this was the era of the fire laddies), the boards of trade, aldermen, "all hands and the cook" joined in the parade. The printers had a press, which was said to have been used by Ben Franklin, and hauling it along the street on a float, they printed an ode while parading. Gov. Seward and Mayor R. H. Morris reviewed the rejoicing hosts. Great admiration was evoked by the new fountains in Union square and City Hall Park. There was a brilliant illumination in the evening and a great out-of-town crowd. Peter Cooper was one of the committee of the aldermen who introduced Croton water. Octogenarian Haskell, whose "Manual" is a standard today, says that "plumbers were in great demand and a mob of ignorant, untrained men rushed into the business." The real mechanics, like Ivers and Brien, set up a standard against them of "practical plumbers" as the years rolled on, but the "untrained and ignorant" have never been completely eliminated. Bath tubs were all lined by the plumber. How many plumbers today can line a **bath tub** or a **tank,** or use a round iron? The **practical** plumber could in the early days. They made their own traps for a long time after I became acquainted with the trade. They had substituted iron soil pipe for the old lead soldered seam pipe, but I knew the men who were adepts at making lead soil pipe, and a branch of whose art had been lining coffins with sheet lead. I remember hearing the elder Van Tine, of Sixth avenue, tell of a rush of work on coffins in his plumbing shop when jobbing had to wait, there were so many coffins to line; until the dead were buried the living had to wait for repairs. Bath tubs and closets were not thought of until long after the opening of the acqueduct in Forty-second street. The idea was drinking water. But gradually baths and other fixtures were used.

Henry Steeger was one of the early coppersmiths who made honest work. His wife helped him in the shop and could solder a seam with the best of them. Other makers of copper baths, pans, tanks and floats started in, like Jochum & Jetter, John Trageser, and in Philadelphia C. A. Blessing, but the name of Steeger was never dimmed. It always stood for extra quality stamped upon copper goods. Steeger's son continued the business into the 20th century, but there was no call for the old-time articles and he closed his shop. I knew most of the early coppersmiths and can testify as to the honesty of their calling and the high grade of their work.

The acqueduct, whose gray stone walls surrounded a waterless waste for years after the new reservoirs were built in Central Park, has vanished, and the most splendid library building, of dazzling white marble, in the world stands there, a fountain and reservoir of knowledge.



At the convention of the National Association of Master Plumbers held in Boston last July: Mr. and Mrs. Jacob Bugger, and Mr. and Mrs. Frank Moeller, all of Philadelphia. Photograph by our Mr. Winslow.

Looking Ahead.

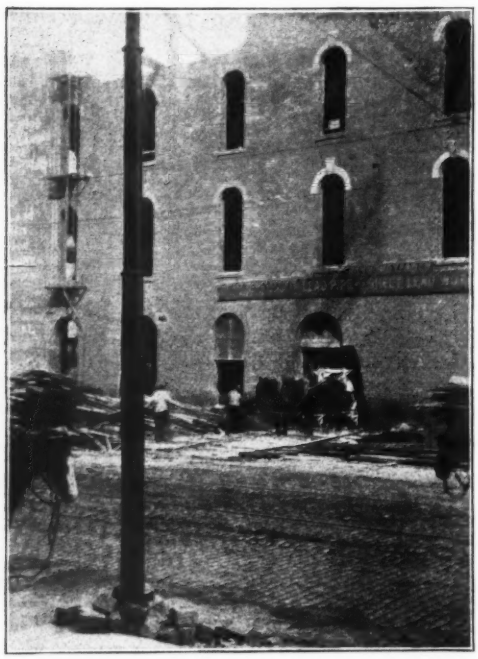
"Now, Pat, would you sooner lose your money or your life?"

"Why, me loife, yer reverence; I want me money for me old age."—Philadelphia Inquirer.

Wholesale Plumbing

Kuhn Specialties Company, Orange, N. J., has been incorporated, with a capital of $300,000. The incorporators are: Harry H. Picking, Leslie Gray and Charles O. Geyer. The company is to acquire letters patent for manufacturing improvements in devices for flushing basins, etc.

Union Metal Works, of Carter and Beach streets, Chelsea, Mass., whose factory was entirely destroyed in the conflagration which visited that city on Monday, September 21, has commenced the erection of a foundry, 80x50 feet, and a machine shop, 100x80 feet. Both structures will be fireproof.



"The Passing of the Old."—The destruction of the plant of the Raymond Lead Co., at the corner of Lake and Clinton streets, Chicago, to make way for the twenty-million-dollar railway station for the Chicago & Northwestern. This building has for many years been a landmark in the plumbing supply trade of Chicago. The picture is taken from the Clinton street side, looking toward Lake street. Photograph by Jno. K. Allen.

At Abingdon, Ill., F. A. Holtsman & Company, of Peoria, has secured the contract for erecting the main building of the new Abingdon Sanitary Manufacturing Company's factory. The building is to be two hundred and seventy-five feet long by fifty feet wide, and two stories high. The company will manufacture vitreous china combination, low down water closets, made by a new process. The tank is cast in one piece and the closet is also cast in one piece. The officers of the company are as follows: President, Dr. C. F. Bradway; vice-president, G. A. Shipplett; secretary, F. L. Torrance; treasurer, T. H. Maloney; general manager, James Simpson.

The National Lead Company's general offices and its Atlantic branch have been moved from the tenth floor of the building at 100 William street, where they have been for the past eleven years, to the nineteenth floor of the Trinity building, 111 Broadway, where they will occupy the entire floor. The Trinity building is one of the most handsomely appointed office buildings in New York, and the offices of the company on the nineteenth floor command a fine view of the harbor and lower Manhattan. The general offices and the private offices of the officers of the company are being fitted up with sumptuousness in keeping with the size and commercial importance of the company.

Wholesale Heating

Henry Wernecke is planning the erection of a factory at Manitowoc, Wis., for the manufacture of heating specialties.

The Schaeffer & Budenberg Mfg. Company has moved its factory from Foxboro, Mass., to 963-965 Kent avenue, Brooklyn, N. Y.

Geo. A. Brown, Milwaukee representative for the Herbert Boiler Company, of Chicago, reports business good in his line and that many heating systems are being installed in his city at the present time.

The Armstrong Manufacturing Company, of Bridgeport, Conn., was compelled to move their New York office to 248 Canal street on account of the razing of the buildings along Center street incidental to the construction of the new subway.

The Ruud Manufacturing Company, of Pittsburg, has opened a branch office at 1407 Brown-Marx building, in Birmingham, Ala., in charge of F. W. Hemphill. The company reports a larger business for the first eight months of 1908 than they had for the same period in 1907. In this respect they are not alone. We are frequently hearing of manufacturing enterprises in the plumbing and heating trade who are in this delightful condition.

Electric Heat Regulator Company, of Minneapolis, Minn., reports that its September business just closed was the largest for that month of the year in its twenty-five years' experience. The business for September this year exceeded that of September, 1907, by forty per cent. The result of this comparison is all the more gratifying because the gain is made over September, a year ago, before there were any indications of or effects whatever from the panic.

The American Society of Heating and Ventilating Engineers will hold its fifteenth annual meeting on January 19, 20 and 21, 1909, in the Engineering Societies building, at 29 West Thirty-ninth street, New York City, according to announcment just issued by Secretary W. M. Mackay. It is the desire of the board of governors that as many of the members as can possibly do so should attend this meeting and contribute to its success by preparing a paper on some subject connected with the heating branch of engineering, or in furnishing some topics for discussion which would be interesting to the members and of value in the society's proceedings. Papers to be presented at this meeting should be in the hands of the secretary as early as possible, so that they can be passed on by the com-

mittee on publication, advance copies printed and forwarded to the members in time to allow them to prepare a discussion on them before the meeting. Papers in the past have frequently arrived too late for publication, thus detracting from and preventing a thorough discussion of the paper, and it is the desire of the board of governors that papers should arrive early, in order to insure a full and free discussion of them. Those who will prepare papers or submit topics for discussion are requested to advise the secretary to that effect at the earliest possible moment.

The seventh annual outing of the employes of the John Simmons Company, of New York City, which was recently held, was a great success. At 11 o'clock the grounds at Gillies New Dorp, S. I., began to show considerable life, those in attendance enjoying themselves kicking a football until breakfast, which was served at 12 o'clock. At 1:30 p. m. the games were started. The first on the program was a 100-yard dash, which was won by Frank Gilbert. Next was a jumping contest, the first honors going to Wm. Sohn. Then came the fat man's race, in which Wm. Moran, J. S. Kelly, Wm. M. Bowie and a few others participated. Wm. Moran won first prize. The last on the program was a shoe race, which was a laugh for all those present, who enjoyed seeing the shoes flying through the air. This was won by Lou Stanton. A game of baseball was indulged in by the plumbing department and the steam department. The game ended in the defeat of the steam department. After this it was time for dinner. All then journeyed over to the dance hall and were entertained by Prof. Wm. Sohn playing the piano while Prof. Bowie and Hollis sang popular songs. Frank Gilbert, the winner of the 100-yard dash, next presented the professor with a bouquet in the shape of a little tree found in the ground. The committee which deserves credit for carrying out this annual outing so successfully consisted of the following: **George Keyes, John Collins,** John Nelson and Thomas Donahue.

Steam and Mill Supplies

Henshaw, Bulkley & Company, of San Francisco, Cal., announce that they are now permanently located in their new and handsome four-story building at 19 and 21 Fremont street.

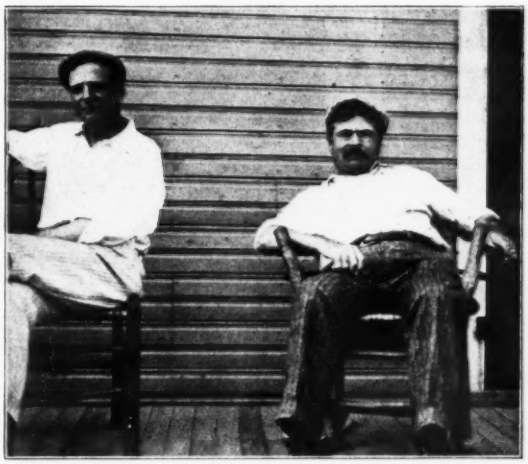
Gallagher & Greene, proprietors of the Wilna Machine Company, Carthage, N. Y., have purchased property adjoining the Kesler block and will erect a large one-story foundry and machine shop.

The Anchor Bolt and Nut Company, Poughkeepsie, N. Y., has been incorporated with a capital of $45,000. The directors of the company are: Albert J. Glass, Joseph J. Glass and John L. Glass, of Poughkeepsie.

The Stuart & Peterson Company, of Burlington, N. J., has completed the construction of its new machine shop, 30x100 feet, two stories, and is now installing the equipment. The building, which was formerly used as a machine shop and from which the machinery has been removed, will be made a part of the foundry.

The Hewitt Manufacturing Company, of St. Louis, Mo., is building an addition to its foundry and making other improvements to cost about $100,000. The company expects to occupy its new building about the middle of December. The machinery, which will be electrically operated, has been purchased.

The San Antonio Machine and Supply Company, of San Antonio, Texas, has acquired the plant and stock of the Collins-Gunther Company for $25,000. The plant, which employs about 60 men, will be continued in operation at the present location. The company intends to go into the manufacturing business on a more extensive scale.



From Chicago Heating and Plumbing Trades' recent golf tournament at Hinsdale, Ill. The gentlemen in the picture are W. C. Heath and Geo. F. Hughson, the former at the left. From the positions they have assumed toward each other in this picture one might infer that they had played their last flight together, this, however, would be a false conclusion as they have probably never been opponents, and if such an occasion should arise their genial dispositions would make friction an absolute impossibility even in a battle on the golf links. The photograph was taken by David E. Kennedy.

Metal Market

New York Metal Market, October 6.

Copper, Prime Lake	$13.50-13.62½
Copper, Lake, Arsenical brands	13.50-13.62½
Copper, Electrolytic	13.45-13.55
Antimony, Cookson's	8.12½
Lead	4.50
Spelter	4.80
Straits Tin	29.45

Chicago Iron Market, October 8.

Southern, No. 2 Foundry	$16.85-17.35
Lake Superior Charcoal	19.50-20.00
Lake Superior Coke Iron, No. 2 Foundry	16.50-17.00

October 8, 1908:

Foundry iron was the same price as week previous
$7 less per ton than the year previous
Copper was ⅛c less a lb. than the month previous
1⅝c less a lb. than the year previous

New York, N. Y.—The attitude of all interests in the copper trade is one of patient expectancy for the time to arrive when developments will be such as to infuse

greatly increased stimulus into the market at all points, according to D. Houston & Company. Athough there have been no particularly stirring movements in the metal very recently to chronicle, nevertheless conditions during the past month were regarded, in different quarters, as fairly satisfactory. Domestic consumption appears to be heading slowly in the right direction, and while the buying for home use is conservative to a pronounced degree, there are at the same time indications that American demand is eventually bound to show a marked increase whenever it becomes apparent that the country is ready to resume business on a normal basis.

New York, N. Y.—The volume of iron inquiries coming out is the backbone of the market, despite the small sales. Melters in this territory and New England that have not covered their requirements for the fourth quarter of the year are issuing small inquiries, commensurate with their orders, and dealers report a good-sized business up before the trade for figures. A canvass of the leading melters in this territory shows little improvement in business. The specialty men have sufficient business on their books to last them nearly to the end of the year, but the jobbing foundries are doing little or nothing. Most of the orders placed recently are in anticipation of a better business toward the end of the year, and melters are anxious to secure supplies before any changes in price occur. In New England a better feeling is reported among the melters. Orders are coming in more freely for finished material, which is expected to bring out some good-sized orders for raw material shortly.

Lighting Department

The Bauer Gas Burner and Heater Manufacturing Company, of Kansas City, Mo., has been incorporated, with a capital of $3,000. The incorporators are August F. Bauer, John Tarply and Percy A. Budd.

The offices of the Alton Manufacturing Company have been moved from the St. James building, Twenty-sixth street and Broadway, to the eighth floor of the Mattlage building, 99 Warren street, New York City.

Obituary

Henry E. Pridmore, of Chicago, manufacturer of molding machinery, passed on suddenly last week at Glasgow, Scotland, while on his annual vacation. He was in his 55th year and he is survived by his wife and three sons.

J. W. Roberts, who formerly conducted a large plumbing business at Tampa, Fla., passed on at his home in that city on Wednesday, September 30, in his 53rd year. He retired from the plumbing trade a few years ago and transferred his interests to the cigar business, which he entered in partnership with his son. He was prominent in the Masonic fraternity and he left a large circle of friends.

Harry J. Ott, superintendent for the Illinois Engineering Company, of Chicago, passed on at Denver, Colo., on Friday, September 25. Mr. Ott was a member of the American Society of Heating and Ventilating Engineers and of the Illinois Chapter of that society and also of the Western Society of Engineers. He had been connected with the above company for over six years and was the author of several papers on heating and engineering subjects. He is survived by his widow. A large circle of friends in the heating trade will mourn his early demise.

Personal

E. J. Seitz, secretary of the Union Brass and Metal Manufacturing Company, of St. Paul, Minn., was in Chicago this week.

J. C. Teague, secretary of the Honeywell Heating Specialty Company, Wabash, Ind., spent the early part of the week among the heating trade in Chicago.

Archie Maddock, of the Thomas Maddock's Sons Company, of Trenton, N. J., was in Chicago and made many of his friends in the trade glad by his cheerful presence.

Chas. E. Hetzel, of the estate of J. G. Hetzel, 67 Maine street, Newark, N. J., returned last Saturday from a trip to Europe, on which business and pleasure were combined.

E. L. Dawes, of the Standard Sanitary Manufacturing Company, Pittsburg, Pa., has been nominated as presidential elector on the republican ticket for the state of Pennsylvania.

F. H. Caldwell, president of the Cahill Iron Works, of Chattanooga, Tenn., is at present on the Pacific Coast. He called on some of his friends in the San Francisco trade last week.

C. C. Hartwell, of the C. C. Hartwell Plumbing Company, of New Orleans, La., was in Chicago this week as a delegate from his city to the Lake-to-the-Gulf Deep Waterways Convention.

Edwin G. Bedell, secretary of the Master Plumbers' Association of New Haven, Conn., is ill with an attack of typhoid fever and has been confined in a local hospital for the past seven weeks.

F. H. Rettig, of Louisville, Ky., treasurer of the Ahrens & Ott Manufacturing Company, was recently run over by his own automobile and seriously injured. He is doing well and there is a good chance for his recovery.

Geo. W. Campbell, secretary of the Campbell Manufacturing Company, of Gadsden, Ala., was in Chicago this week on an extended trip through the west, on which he will visit all the larger cities in that part of the country. He gave a good report about the way business gravitates towards his company.

E. W. Blatchford, founder of the E. W. Blatchford Company, of Chicago, and his wife celebrated their golden wedding anniversary at their summer home, Ulmenheim, Montclair, N. J., on Wednesday, October 7. Innumerable congratulations by letter and telegram were received from their many friends in all parts of the country, as well as from some in foreign countries.

"**Do you know** you talk in your sleep, Henry?" said his wife.

"Well," was the meek response, "do you begrudge me even those few words?"—Ladies' Home Journal.

Association News

San Francisco, Cal.—Association affairs in this city are running along nicely, and while there are no questions of great moment now under consideration there are plenty of problems to occupy the attention of the members. The work of strengthening the organization of the State Master Plumbers' Association is going on systematically and several members are now visiting different sections of the state and lining up new members.

Indianapolis, Ind.—The election of officers for the United Association of Journeymen Plumbers, Gas Fitters, Steam Fitters and Steam Fitters' Helpers of the United States and Canada took place at the last session of the biennial convention, which was held in this city last week, and it resulted as follows: President, John R. Alpine, Boston; secretary-treasurer, J. M. Love, Philadelphia; auxiliary secretary-treasurer, Edward Hobbs, Chicago; general organizers, Thomas Burke, Chicago; Edward Leonard, Schenectady, N. Y.; Frank Kennedy, Chicago, and William Lynn, Jr., Cincinnati. President Alpine has served one term as president and was re-elected by acclamation.

CONVENTION DATES.

October 21, 1908.—Fall meeting of the **Massachusetts State Association of Master Plumbers** at Springfield, Mass.

January 19-21, 1909.—Fifteenth annual meeting of the **American Society of Heating and Ventilating Engineers**, in New York City.

Plumbing Inspection

Milwaukee, Wis.—Under the recent decision of Judge Ludwig in the circuit court to the effect that the Milwaukee building laws are out-of-date, the office of plumbing inspector, as well as that of building inspector, might as well be abolished. The decision, which was rendered in the case covering the authority of the city of Milwaukee to supervise the building operations at the new Milwaukee State Normal School, practically annuls the right of the city inspectors to condemn any building. It is expected that the city will lose no time in getting the case into the supreme court and have the question decided as to whether or not it is necessary for the city to wait until a building has been completed before the city can take action. Plumbers say that if the city must wait until a building is erected and then bring proceedings to have it declared a nuisance it will cost the city and the builders a needless outlay of money. It would appear under the recent decision that the city will be forced to begin a separate proceeding in each case to have a building declared a nuisance. Plumbing Inspector George R. Stolz says that unless a favorable ruling is rendered in the higher court little can be done in enforcing the laws providing for the sanitary installation of plumbing.

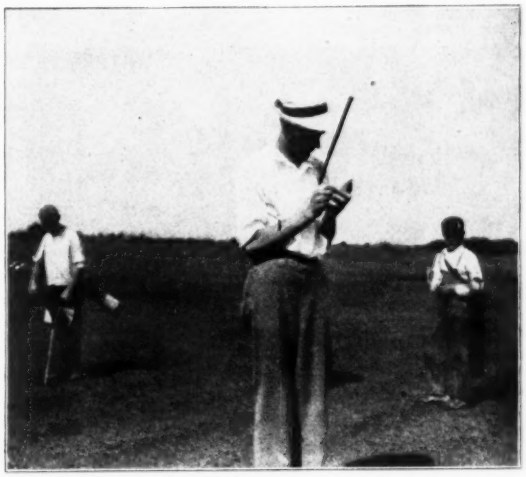
Correction.—In the description of the operation of the Sloan flushing valve in last week's issue it was stated that this device "can be used with any pressure under 10 pounds." This was a typographical error, and it should have read "100 pounds."

Pennsylvania

Pittsburg, Pa.—The contract for plumbing in the new South Side Congregational church has been awarded to McKay & Reilley, of 2626 Carson street.

Pittsburg, Pa.—The Buerkle Plumbing Company, of Second avenue, has received the contract for plumbing the new Twelfth Ward police patrol station.

Pittsburg, Pa.—John P. Brennan, assistant superintendent in the Bureau of Building Inspection in Pittsburg, Pa., is about to prepare plans for public comfort houses for that city.



From Chicago Heating and Plumbing Trades' recent golf tournament at Hinsdale, Ill. This photograph, which was taken by David E. Kennedy, shows Richard H. Harrell figuring out his standing after the qualifying round. It would indicate that Mr. Harrell needs the services of two caddies, but his many golfing friends know that this is far from being the case.

Pittsburg, Pa.—The Vour Plumbing Company, of East End, has been awarded the contract for the plumbing for a block of eighteen fine residences that are being built in East Liberty for Knapp Brothers.

Pittsburg, Pa.—The contract for the hot water heating system for the new police patrol station that is being built at Ward and Fulton streets has been awarded to the Anderson-Darragh Company, of 3206 Penn avenue.

Pittsburg, Pa.—One of the best steam heating contracts that has been handed down in this city for several years has been awarded to P. F. Maginn & Company, 1025 Forbes street, and calls for the installation of the system complete in the large new addition that is being built for the Fort Pitt hotel.

McKees Rocks, Pa.—The Kress Plumbing Company, 4779 Liberty avenue, Pittsburg, has been awarded a contract for installing the entire plumbing in a block of six fine residences that are being built here for Arthur Bell, of Pittsburg. The contract calls for high class modern bath rooms, kitchen and laundry plumbing and instantaneous water heaters.

Philadelphia and Vicinity

Philadelphia, Pa.—The insurance feature of the Master Plumbers' Association of this city is proving quite popular. New names are being added at every meeting, the October meeting being no exception, but made a better showing than any previous meeting, thus indicating that the interest in the movement is growing.

Philadelphia, Pa.—George & Runyon have succeeded to J. S. Walters' plumbing and heating business at 1919 West Susquehanna avenue. J. J. McTague & Son have opened a plumbing establishment at 266 South Eleventh street. Richard C. Hirsch has opened an up-to-date plumbing and heating establishment at 1632 North Seventh street.

Philadelphia, Pa.—Robert McCleary, the popular master plumber, of 870 North Tenth street, has just returned from a trip to the Thousand Islands, Montreal, Lake Champlain, Lake George and Albany. His wife accompanied him on the trip, which was made exceedingly pleasant by the fact that they enjoyed sunshine every day of the entire trip.

Philadelphia, Pa.—Harry Lentz has moved from 449 Poplar street to 634 West Girard avenue, where he has fitted up an elegant showroom for his plumbing and heating business. The tasteful arrangement is thoroughly up-to-date, and the remodeling of the four-story building into an apartment house is proving a profitable investment for Mr. Lentz, as he had many applicants before the work was completed.

Philadelphia, Pa.—John R. Sites, of 2918 Fletcher street, has secured the contracts for plumbing and gas fitting in four houses and for the heating of one house in his part of the city. Hoben & Doyle, of Twenty-first and Pine streets, are just completing the plumbing and heating in the new Lafayette office building at Fifth and Chestnut streets. F. P. Dougherty, of 1944-1946 East Passyunk street, is completing the heating in the large addition to the Medico-Chirurgical hospital, at Eighteenth and Cherry streets, the plumbing in the public bath house at Twelfth and Reed streets and the hot water heating in a new residence at Nineteenth and Reed streets. William McCoach has secured the contract for the plumbing in the addition to the Medico-Chirurgical hospital.

G. Wallace Smith.

"Jumpin' snakes! This settles it; I'll swear off at once."—Life.

Southern Notes

Jacksonville, Fla.—R. L. Slanter has opened a plumbing establishment at 131 East Forsyth street.

Louisville, Ky.—F. S. Schardein & Sons have been awarded the contract for the installation of a steam heating system in the State University.

Dyersburg, Tenn.—Patton & Chamblin's plumbing establishment was destroyed last week in the fire which burned down the Masonic Hall, the oldest building in the town, erected 65 years ago. The plumbing firm's loss was covered by insurance.

Wheeling, W. Va.—The Robert W. Kyle Company, of this city, has been awarded the following plumbing and heating contracts, which will keep it on the go pretty much for the balance of the year: The Mt. De Chautel Academy, 16,000 feet of radiation; the Sisters of the Good Shepherd Academy, St. John's Orphan Home, the New Victory Theater, Gorden Late's residence, Bridgeport, W. Va.; the Humboldt building, Clarksburg, W. Va.

The Middle States

Oxford, O.—John Mosier will soon open a plumbing establishment here.

Lowellville, O.—Louis Russell will soon open a plumbing establishment in the Smith building on Water street.

Evansville, Ind.—Harry G. Newman has been awarded the contract for the plumbing and heating in the new Furniture Exchange building.

Summit, Ill.—The Argo Plumbing and Heating Company has just engaged in business here. The new concern would like to receive catalogues of plumbing and heating goods from manufacturers and jobbers.

Streator, Ill.—J. A. Huggans Company has moved its plumbing and heating establishment from 108 North Sterling street to 114 North Bloomington street. The new building is 75 feet deep and well fitted up with a handsome showroom and all the latest improvements in the way of machinery and tools.

Peoria, Ill.—Cody & Shea have secured the contract for remodeling the plumbing and heating in the St. Patrick's school in this city. Dooley & Bruninga have secured the contract for the plumbing in the new Y. W. C. A. building in this city. This is the finest contract that has been awarded here this season.

Grand Rapids, Mich.—Sproul & McGurrin have been awarded the plumbing contract for the chemical laboratory at Ann Arbor, the amount being $18,000. The same firm has the plumbing of the postoffice at Ann Arbor, $2,600, and the plumbing and heating of the postoffice at Oswego, a $6,000 contract.

Painsville, O.—The contract for the plumbing system in the fine new Central High School building that is being erected here has been awarded to the Hawkins Brothers Company. The contracts for the steam heating and ventilating systems for the structure also went to the same concern. These contracts are among the largest and most important that have been awarded here this year.

Notes from the West

North Platte, Neb.—A. L. Dunn is making arrangements to open a plumbing establishment here.

St. Louis, Mo.—John F. Stuckenberg, of 1804 Sidney street, has secured the contract for plumbing 150 flats.

Littleton, Colo.—Jull & Son, the well known plumbers of this place, report business good and a large number of contracts on hand at the present time.

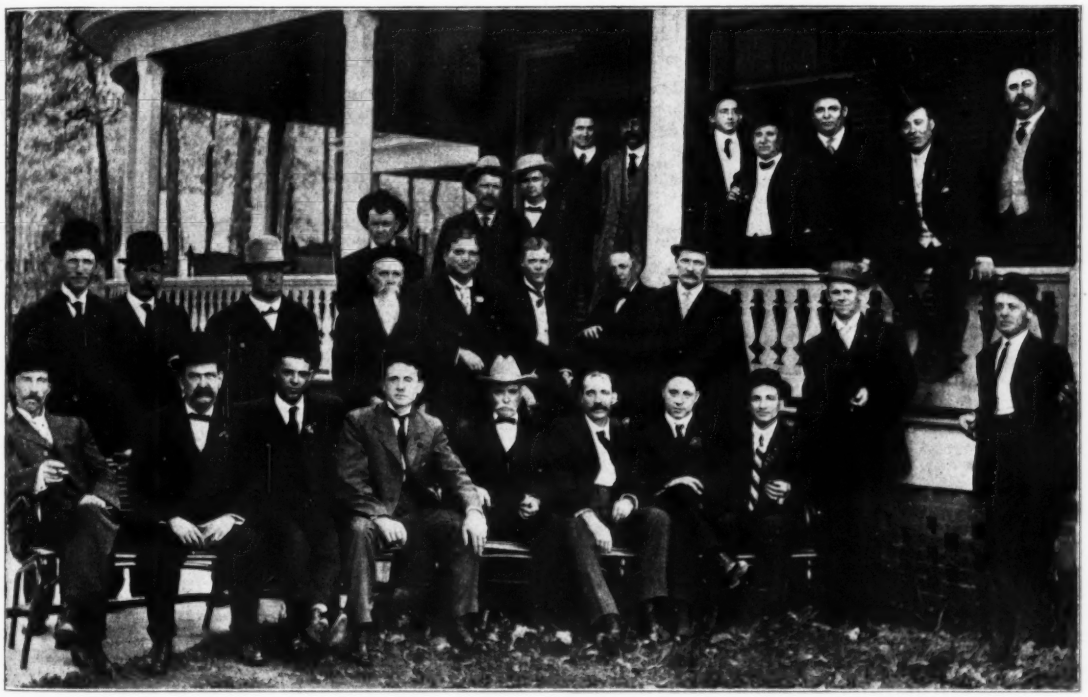
Denver, Colo.—Potter Heating Company has been incorporated, with a capital of $25,000. The incorporators are J. D. Potter, A. L. Melloy and W. H. Althouse.

has been admitted into membership in the Colorado Master Plumbers' Association. They would like to receive catalogues and price lists from manufacturers and jobbers.

The Great Northwest

Green Bay, Wis.—George F. Reeke has secured the contract for the installation of a plumbing system in the new Gotfredson building.

Antigo, Wis.—J. W. Hoefer has been awarded the contract for the installation of a new plumbing system in the old Zahl residence.



Members of the Arkansas Master Plumbers' Association. From photograph taken at their recent meeting in Hot Springs, Ark.

St. Louis, Mo.—William Burke, of 1811 Pine street, recently secured a good-sized plumbing contract in Florida and he is at present superintending the work on the job.

Keokuk, Iowa.—W. P. Sutton has been awarded the contract for the plumbing in the new school building which is to be erected this fall at the corner of Ninth and Concert street. The consideration is $2,088.

Denver, Colo.—David R. Jones, who went to California some months ago for the benefit of his health, has again returned, strengthened in health, and resumed business at his old place, 2128 West Thirty-second avenue.

Sterling, Colo.—The Sterling Plumbing & Heating Company, conducted by C. W. Purcell and John Mathis,

La Crosse, Wis.—Thill & Lapitz, of this city, have secured the contract for the construction of a sewerage system at West Salem, Wis.

Eau Claire, Wis.—The plumbing firm of Heeckstadt & Heidman has been dissolved. Mr. Heeckstadt's son will be associated with him in business at the regular stand and Mr. Heidmann has opened a new shop in the Davey building on Grand avenue.

Columbus, Wis.—The Columbus Plumbing and Heating Company has been organized by C. A. Brady and H. C. Dunn, and the new firm has opened an attractive establishment in the Evans building. Columbus is planning the installation of a complete sewerage system and the new firm has the advantage of being the first in the field in its line.

Pacific Coast

San Francisco, Cal.—One of the most encouraging features to plumbing contractors at the present time is the fact that, although they have to pay a higher price for their help than they think should be the case under present conditions, they also have a wide field to choose from and the men now in their employ are, as a rule, better mechanics and better fitted for plumbing work than has ever been the case before. Even the work of journeymen who have been in the business for years is of a higher order than it was three years ago, for during the period following the fire there has been much to learn owing to the new types of buildings being erected and the break from the old routine. After the fire almost any man who could cut and thread a pipe could find work somewhere in San Francisco as a plumber, and many came from outside points and went to work, men who could not fill a position elsewhere. The great rush in the rebuilding line in San Francisco is over now, however, and most of these "earthquake" plumbers have left. Very few first class mechanics in the plumbing line are idle here now, and from all indications these plumbers will be kept busy for a long time to come, for the steady work of rebuilding the city is now setting in in earnest. The effect of this weeding out of inferior workmen is readily noticed by the increased amount of work per man that is now being secured by contractors, and it is estimated that there is a difference of fully 20 per cent in this one item. Even the best workmen are doing better than they were a year ago, for the reason that they can see that work is none too plentiful and that there are men who would be glad to secure their positions. This increase in the amount of work turned out is really equal to a decrease in wages, and contractors look upon it as such. The feature of business in San Francisco at present is the large number of small contracts being let, indicating that the construction of large buildings is about over and that from now on the work will be more scattered.

The charming daughter of Frank Jay, a prominent master plumber of Los Angeles, Cal., until recently member of the Board of Directors of the National Association of Master Plumbers. The photograph was taken by our Mr. Winslow at the recent convention in Boston.

Bisbee, Ariz.—The Standard Plumbing Company has moved from Naco road to 56 Main street.

Los Angeles, Cal.—W. B. McKinley is to install a low pressure heating system in the Hotel Savoy at Long Beach, Cal., for $1,280.

San Francisco, Cal.—The United Builder's Supply Company has vacated its quarters on Golden Gate avenue near Jones street and is now located in its new store on Mission street, near Third. In addition to carrying a line of builders' hardware, a plumbing and steam fitting business is carried on.

San Francisco, Cal.—The Robert Dalziel, Jr., Co has been awarded the contract for the installation of air washers and heating and ventilating ducts in the new Palace Hotel, the consideration being $35,497. McCormick & Henderson are to do the plumbing in the building being erected on Sutter street just above Kearny by Emma G. Rose. William S. Snook & Son have just been awarded the contract for doing the plumbing work in the building that is to be erected by the Hobart Estate Company on Grant avenue, near O'Farrell street. The contract amounts to about $3,000. Ickelheimer Brothers are to do the plumbing and gas fitting in the five-story building to be erected by the Hug Estate Company on Howard street near Third. The price for this work is $12,630. John G. Sutton & Company is to install the heating system and other work for $2,880. Ahlbach & Mayer have contracted to do the plumbing work in the new Vanderburgh building to be erected on Market street, near Marshall square. The California Hydraulic Engineering and Supply Company is to install the heating system in the building being erected by the Doe Estate Company on Kearny street, near Sutter. The cost of this work is to be $4,150.

New Jersey

Orange, N. J.—J. J. English has some good work to his credit in that of a $1,200 plumbing contract in Paul Tiemer's new residence, and the plumbing and heating in Dr. William Bryan's residence, amounting to about $1,000.

Camden, N. J.—The L. C. Simpson Plumbing and Heating Company, of 820 Broadway, have the contracts for plumbing the new Y. M. C. A. building at Broadway and Federal streets, the plumbing and gas fitting of eight houses for F. J. Daly at Eighth and Lawrence streets, the heating for M. Haines of 609 Linden street, the heating for B. F. Fowler at Woodbury, N. J., and the plumbing and heating in Miss J. Garrett's $20,000 stable at 825 Lombard street, Philadelphia.

Substitution

Concluded from page 29

the biggest and most substantial firms do not hesitate to raise prices on any other fixtures that are specified in such a manner as to exclude competition. If I should specify a basin of a certain make and plate number and was known to the maker's representative as an enemy of substitution it would probably cost me 20 per cent more than the same representative would place it in substitution for another maker's ware.

So, between the makers' tendency to raise prices when substitution is not probable and the constant attempt (and success) in substituting cheaper goods, the architect and the owner generally get the short end of every deal.

There are undoubtedly cases where the purchase of a specified article tends to embarrass a contractor in some manner, but as a rule there is money in it for the plumber on a deal involving substitution, else why should he offer to put in A's goods when B's are specfied, and offer B's goods when A's are specified?

Why cannot the manufacturers educate the plumber against the practice by being liberal and honest with him, instead of squeezing him every chance they get? Why cannot the manufacturers get the local jobbers in line by having standard qualities, fixed prices and reasonable incidentals? Why cannot the manufacturers use the energy of their salesmen in inducing the owners and architects to specify their goods and let the other makers' business alone, in return for a like immunity from business piracy?

There does not appear to be any good business reason why a maker should not have twenty different prices on a line of closets, with full measure of quality in every one for its particular price.

But, with cutting a "little bit off the top" of tank linings, changing from 12-ounce copper to 8-ounce copper to save 19 cents (with a loss in value received of practically the price of the tank), the rapid elimination of real copper from brasswork, brass waste pipe tubing hardly thicker than its coating of nickel, cocks that can't stand a reasonable water pressure, toy seat posts and hinges, unseasoned woodwork, closet flanges that have to be kept packed in cotton wool and nursed, and so on all down the long list, isn't there coming a time when it will be a physical impossibility to cheapen them any further and have anything left? Then, perhaps, we will wipe the slate off and begin all over again by going back to sound materials and good business.

Why?

A. C. Cogswell.

Why worry when you find things wrong,
And fret and fume the whole day long?
It has results that multiply
Your troubles, and will thus belie
The good things often said of you.

Just turn the whole thing into song,
And then you'll surely get along,
And find the work has more of play,
That matters will not go astray;
For to your friends you must be true.

Cheer up, and help things move along;
Exert your manhood and be strong.
Thus be your own judge of fair play,
And things will brighten day by day.
A bit of wisdom you won't rue.

The life you lead, the part you play,
The good you're doing day by day
Has much to do with what is right,
And helps you on with that grand fight
That keeps us all from feeling blue.

Who's Who in Britain—I

John Tongue, of Rochdale, England, one of the most influential master plumbers in England, having been president of the National Association of Master Plumbers in 1906. He has had a wide experience in plumbing and heating work, but is particularly recognized as an authority on pumps and well boring.

With the Makers

The Jewell Temperature Controller.

The Jewell Manufacturing Company, of 40 North Green street, Auburn, N. Y., is the manufacturer of the Jewell time clock thermostat or controller, for which the claim is made that it has solved the problem of keeping a house properly warmed for comfort and health, and that it not only keeps the house just as warm as you want it, but saves from 20 per cent to 33 1/3 per cent of the fuel usually burned.

Other desirable and valuable features found in this controller, as stated by the manufacturer, are as fol-

lows: It does its work just the same, no matter what the weather is outdoors, and no matter what changes come. It will outlast any heating plant, for there isn't anything about the mechanism to wear out. It works equally well with hot air, hot water or steam systems. It comes complete from the factory and is ready to go to work as soon as it is installed. It never shirks nor forgets, and it never gets tired nor takes a day off.

The manufacturers would like to secure a representative dealer in every locality where they are not already represented, and heating contractors and steam fitters are invited to write the company for its new and attractive proposition, mentioning "Domestic Engineering."

The H. S. Renton Floor Flange and Asbesto-Graphite Gasket.

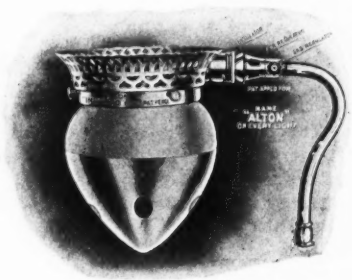
The Charm Air Regulator Company, of 966 Myrtle avenue, Brooklyn, N. Y., has met with a generous demand for the H. S. Renton floor flange and asbesto-graphite gasket, an ingenious device that does away with putty joints and other objectionable makeshifts in the installation of water closets. This flange and gasket, as shown in the accompanying illustration, has been approved by the building departments of Greater New York, Chicago, Baltimore, Philadelphia and other large cities, and the manufacturers are confident that it will soon become a staple article in every plumbing establishment in the country. It is stated that one of the officials in the patent office at Washington, when the patent was granted, said: "You have here a distinct advance in sanitary science." Among its many desirable features the following are the most conspicuous: It fits any closet and makes the connecting of a water closet an extremely simple operation. The lead pipe is brought up through the flange, beaten out on the beveled sides and soldered at the top. The gasket is slipped over the spud of the closet before it is set in place. Bolting down completes the job. The wedge-shaped gasket not only has a long bearing, but the sloping sides of the flange press it upward and crowd it into every interstice, making tight even where the base is curved or bent, so that the plumber is sure of a perfect joint on either the best or the very poorest earthenware. The annular clamping plate fastens the pipe to the closet as solid as a rock, the converging inner wall forming a long bearing. The gasket is indestructible and the plumbago with which it is treated being a dry lubricant, will keep it soft for a hundred years, making it possible to take the earthenware up and put it back again in five minutes or to install a new closet without changing the flange or gasket. The manufacturer, the Charm Air Regulator Company, 966 Myrtle avenue, Brooklyn, will be glad to send full particulars upon application mentioning "Domestic Engineering."

The H. S. Renton floor flange and gasket.

A New Way to Chase the Nimble Dollar.

"If the plumbers of the country are not very careful the hardware dealers and department stores are going to monopolize the gas-burner business," said Edward A. Oldham, manager of the Alton Manufacturing Company, of New York City, the people who were the first to bring the inverted gas burner to this country and make it a popular necessity in the progressive household.

"The burner business, particularly that which has to do with inverted gas burners, is legitimately the business of the plumber and the gas fitter. The handling of these goods brings him directly in touch with house-owners and housewives who do most of the purchasing for the American homes. The sale of a single inverted light to a residence is more than likely to put him in line with the next plumbing job that will pay him a great deal more, perhaps, than the profit on one inverted light, but one inverted light installed invariably brings him an order for another inverted light—that is, if the inverted light he installs is not one of the cheap variety that doesn't give satisfaction nor save its owner half the gas bill. One good inverted light installed by a plumber means for him the sale of additional inverted lights, and every inverted light sold is invariably followed by sales of globes and mantles, on which there is a good profit, provided again the plumber is discriminating enough not to handle "department store" globes and mantles, by which we mean globes that are "seconds" and mantles that are so lacking in thorium and the other light giving chemicals that they can be sold by department stores and ten cent stores at a lower price than the plumber can afford. To carry the cumulative chain out further, every one of these sales gives the plumber just that additional opportunity to secure business for his regular plumbing department.

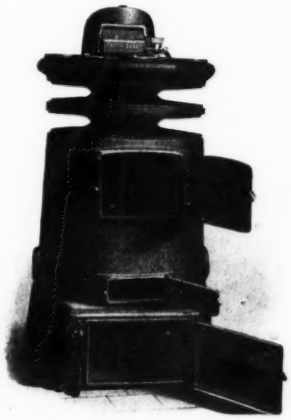


The Alton "Inverto" burner.

"Since the Alton Inverted Light was placed on the market several years ago, our company has specialized with the plumbers and we number today on our books many of the most progressive plumbing firms in the country. It is interesting to note how a side line like inverted burners can be developed by a plumber with the average amount of progressiveness and intelligence. For example, we received an order some time ago from a small plumber in an Ohio town. It was a trial order, and the man who sent the order in evidently was skeptical of the possibilities of selling inverted lights in his town. It was not very difficult to read between the lines of his letter and see that, notwithstanding his outspoken skepticism, he was a man who was willing to try out a new thing and push it if there

Direct Heating Surface

The limited amount of flue travel for smoke and gases permits the construction, in IDEAL Boilers, of 65 per cent direct fire-to-water heating surface. This means full heating value from every pound of coal.



Ideal Premier Boiler showing the small amount of flue travel and generous direct heating surfaces.

This large proportion of direct heating surface is one of the many features which make for highly sensitive heating surface and gives IDEAL Boilers a constantly increasing popularity among house owners.

AMERICAN RADIATORS & IDEAL BOILERS

AMERICAN RADIATOR COMPANY

General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco

was any chance of getting business. Just to test an idea I personally handled the correspondence with him and offered to give him the co-operation of our advertising department in every way that would help him increase his sales for our product. We first suggested that he have his local bill poster put up ten eight-sheet posters that we sent to him, and follow this up immediately with an equal number of three-sheet posters. 'Stickers' were prepared, giving his name as the local agent. Our next suggestion was that we prepare for him the right sort of a form letter, to be typewritten by him on his letter-head, signed by his name with pen and ink and mailed under sealed letter postage to the heads of families he wanted for his customers. We supplied him with plenty of small printed matter that was of the right size to enclose in this letter.

"This man entered into the spirit of our suggestions and put the various ideas into execution with more than ordinary interest. His orders at first were small, but they steadily grew to proportions that were both gratifying to himself and to us, sustaining the conclusions that we had already arrived at as to the benefit of co-operation between manufacturers and the local retailer. We have since learned from this same young man that his plumbing trade has grown in the same proportion that his burner trade has grown, and he is good enough to attribute it all to the development of his burner business.

"What this man has done every plumber in the country can do if he throws a little ginger and gray matter into his efforts. We stand ready to co-operate with him to the best of our ability at all times.

"There are many plumbers who are not now handling an inverted light or a gas burner of any kind. If they can be induced to pause long enough to consider the business-producing possibilities of a line of this character it will be to their real benefit. The inverted burner has come to stay in this country and the next season bids fair to be an 'inverted burner season.'

"America is simply falling into line with Europe in the adoption of the inverted principle of gas lighting. This burner first assumed a practical form in Germany. No invention was ever so quickly adopted as was the inverted gas burner throughout Europe. This was about four years ago. Within a few months the whole continent of Europe took up the subject of inverted gas burners, and put these little money-savers and illumination-givers on chandeliers and gas fixtures. The Alton inverted gas burner about this time invaded America. It was evolved after the German manufacturers had spent fortunes in costly experimentation. The mistakes they had made in employing incorrect principles and expensive methods of manufacture were avoided and the outcome was a burner of much simplicity, effectiveness and inexpensiveness of construction.

"The excellence of the Alton principle of gas lighting is now recognized by everyone, and the upright burner is doomed. 'Domestic Engineering' can do everyone of its readers a genuine benefit by getting them interested in the subject of inverted burners, and particularly in the burner which has already received the sanction and the high encomiums of thousands of homemakers in Greater New York.

"The advantages of inverted burners over upright burners have been so frequently reiterated that there are doubtless few who read "Domestic Engineering who are unacquainted with the desirability of this form of lighting over that heretofore in vogue. In the case of the Alton light a single 'Inverto' gives six times the light of the ordinary gas jet. It can be easily proven that it saves half the gas. This is why the gas companies do not like to handle it, and it is also why the local plumber and gas fitter could handle it to his great individual profit. All the light is thrown downward by the inverted burner, and the light is a bright, white light that is grateful to the eyes. There is no shadow, no flicker, no sputter. They are easy to light and are readily adjusted to any gas fixture. No ceiling protectors, no shades nor reflectors are necessary. A further advantage is the saving of two-thirds the cost of mantles over the old-fashioned upright burners. All these are points that have been testified to by thousands of consumers. It is not likely that all of them are mistaken."

The "Blue Special" House Force Pump.

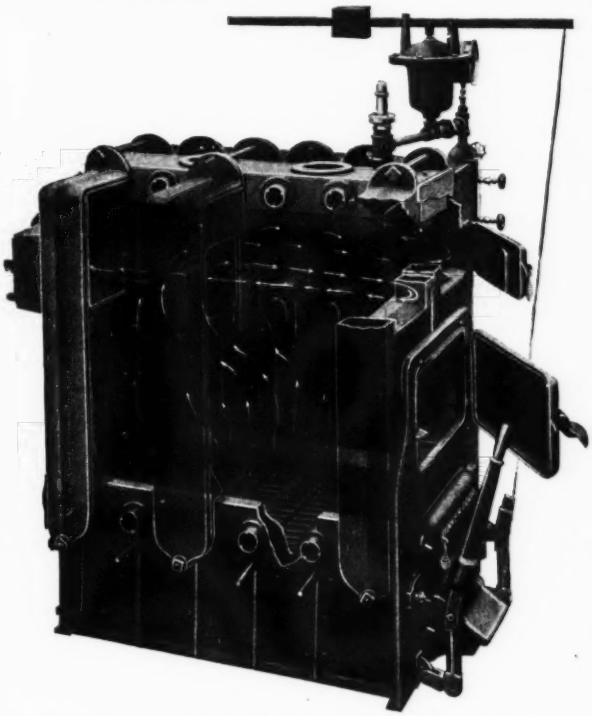
A house force pump that is a departure from the usual pumps of this class is now being manufactured by the Deming Company, of Salem, Ohio. It is built on very graceful lines and it is tastefully decorated in blue and gold, from which it is designated as the "Blue Special." The extra long swinging fulcrum allows it to be operated with a surprisingly small amount of energy and without any noise whatever. The large air chamber and back outlet make it possible to force the water to any part of the house with little effort. A brass tube cylinder, heavy base, long stroke and arrangement of working parts, whereby the upper part of the stock, which is a threaded cap, can be unscrewed, allowing the withdrawal of all working parts are a few of its attractive features. It is also fitted with bibb cock. A post card showing the pump in colors as painted, all ready to ship, also complete details and prices will be forwarded to interested parties upon request to the manufacturer, mentioning "Domestic Engineering."

The Blue Special Pump.

Will Manufacture Automatic Closet Seat Hinge.

W. S. Emery, of 76 Cliff street, New York, N. Y., is placing upon the market a new self-rising or automatic closet seat hinge, which has been named the "Acme." It is constructed of brass, compactly built, and by means of a spring contained in the mechanism, automatically raises the seat to a perpendicular position as soon as it is released. Mr. Emery states that it is his

Improved Capitol Boilers



CAPACITIES: Steam 450 to 1,225 sq. ft. Water 750 to 2,025 sq. ft. Direct Radiation

The Improved Capitol retains the practical merits which have made Capitol Boilers standard in heating efficiency and fuel economy, viz:

Space saving Countersunk Header.

Divided Sections—providing for expansion and contraction, and quick repairs.

Slip nipple construction (no long screws or lock nuts).

And Following New Features:

Height of Improved Capitol—water line 43½ inches (steam); 47½ inches flow openings (water).

Unequaled amount of prime heating surface.

Free waterways—insuring rapid circulation.

Very large fire chamber and deep fire-pot (heavy fire, slow combustion).
Improved grate construction.
Ample ash-pit.
Reduced number of parts—light weight units (economical installation).

We are confident that Improved Capitol Boilers will quickly become popular with the trade and architect, as well as with the general public, by reason of specific and strong practical advantages.

Send for illustrated descriptive detailed literature.

United States Heater Company.

General Offices and Works: Fort St., and Campbell Ave., DETROIT, MICH.

Branches:		Sales Agents:	
DETROIT,	139 Jefferson Avenue	ST. LOUIS, MO.,	L. M. Rumsey Manufacturing Co.
NEW YORK,	129 Worth Street	DENVER, COLO.,	Kellogg & Stokes Stove Co.
CHICAGO,	34 Dearborn Street	MINNEAPOLIS, MINN.,	Plumbing & S. F. Supplies Co.
KANSAS CITY, MO.,	120 W. 11th Street	NORFOLK and RICHMOND, VA.,	Virginia-Carolina Supply Co.
OMAHA, NEB.,	916 Farnam Street		

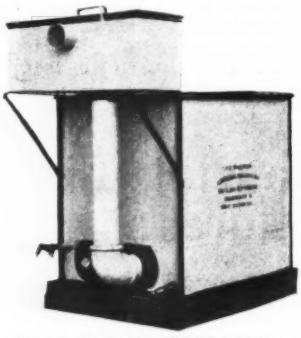
intention to sell them in connection with his line of "Everlasting" closet seats and separately.

Will Make a New Valve.

The McNab & Harlin Manufacturing Company, of 56 John street, New York, has added to the line of valves already manufactured by that company a new Jenkins' disc valve, with all parts made interchangeable with other makes, in both globe and angle patterns; also a line of outside screw and yoke iron-body gate valves, both screwed and flanged.

The J. P. White Cistern Filter.

John P. White, of Fremont, Ohio, has just issued a neat sixteen-page booklet illustrating and describing the White cistern filter, which he thinks will stand the closest inspection, not only in regard to the principles employed, but also in regard to its design and construction. Among the many good points enumerated in its favor are the following: The filtering material cannot wash away. The entire cistern is utilized for filtered rain water, and it is never necessary to be without this rain water on account of cleaning the cistern, as the cistern never requires cleaning, and the filter can be cleaned with the cistern full of water. All the leaves and twigs are brought to a point where they easily can be removed. It makes the rain water as clear as crystal and without any disagreeable taste. No screen will be needed on the suction pipe leading to the cistern to prevent the sediment from entering the pump or water lift, as there will be nothing but clean water in the cistern. The attic tank will not serve as a sediment tank after a White cistern filter has been installed, and the sanitary conditions in the bath room, kitchen and laundry will be greatly improved. Plumbers will find this device a most attractive proposition and they should not neglect to get in touch with the manufacturer at the earliest possible moment. A postal card mentioning "Domestic Engineering" and addressed to John P. White, Fremont, O., will bring full particulars.



The J. P. White Cistern Filter.

Patents

899,513. Pump. Joseph H. Champ, Cleveland, Ohio.

899,532. Automatic Relief-Valve. Amos Harrison, Chicago, Ill.

899,568. Drain-Inlet Guard. Andrew J. Shepard, College Corner, Ohio, assignor of one-third to Henry Shepard, Hamilton, Ohio.

899,584. Valve for Gas-Pumps. Richard Whitaker, New Brunswick, N. J., assignor to the Brunswick Refrigerating Company, a corporation of New Jersey.

899,600. Gas-Burner. Frank Krabal, Chicago, Ill.

899,623. Flexible Pipe. George F. Royer, Wilkes-Barre, Pa.

899,657. Hose-Clamp Tool. George E. Burtscher, Chicago, Ill.

899,659. Valve. Lee L. Craddock and John McCleary, Sonora, Tex.

899,673. Soldering Compound. Edmond M. Merrell and Archibald Merrell, Soda Springs, Idaho.

899,768. Automatic Valve. Anton B. Szperkowsky, Berlin, Germany.

899,830. Blow-Off Device for Domestic Boilers. Jacob Manneschmidt, Jr., Brooklyn, N. Y.

899,838 and 899,839. Heating System. Andrew G. Paul, Boston, Mass.

899,910. Grate for the Furnaces of Steam Boilers. Henry Schofield, Sheffield, England.

899,912. Pressure-Regulator. Andrew Schum, Mariah Hill, Ind.

899,932. Pressure-Gage. Eben S. Wheeler, Detroit, Mich.

899,956. Support for Lavatories. Alfred Coons and George Coons, New York, N. Y.

900,012. Range-Boiler. Maurice Gerstein, Chelsea, Mass., assignor of one-third to Heinan Gerstein, Chelsea, Mass., and one-third to Abraham Cooper, South Boston, Mass.

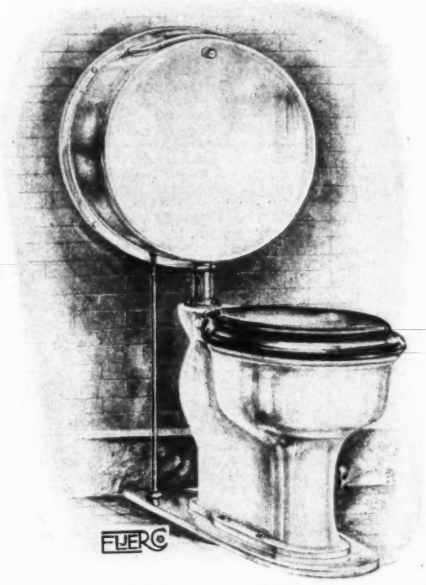
900,071. Water-Closet. Nathan B. Griffith, Philadelphia, Pa., assignor to Keystone Supply and Manufacturing Company, Philadelphia, Pa., a corporation of Pennsylvania.

Trade Literature

From the Louis Lipp Company, of Cincinnati, Ohio: "Superior Sanitary Plumbing Fixtures," Catalogue J, 90 pages, 8½x11 inches, handsomely bound in green cloth with gold stamping. The book is carefully printed on heavy enameled paper and every page bears an imprint of the nameplate of the concern, viz., "The Louis Lipp Company, Cincinnati, Ohio." Its contents are made up of high-grade half-tone engravings with complete descriptions of the company's large lines of enameled iron baths, lavatories, closet combinations, high and low, vitreous china lavatories, pantry sinks and slop sinks, urinals and also plumbers' woodwork and plumbing specialties. The first pages of the book are devoted to excellent views of the company's large factories, foundries and enameling works at Winton Place, a suburb of Cincinnati. Interior views of the wood-working and wood-finishing departments as well as of the enameling rooms and the bath tub foundry are also shown. The company is to be congratulated on this attractive addition to trade literature in the plumbing line.

From Garner Curran, 211 New High street, Los Angeles, Cal: "Western Engineers' and Architects' Gazetteer," 1908 edition, 112 pages, 6x8 inches, bound in cloth; price $5. This directory contains alphabetical list of steam plants, with boiler capacity, names of purchasing agents and engineers in charge, also list of leading gasoline, pumping and other power plants in Arizona and Southern California, and finally a list of

COSTS MORE BUT WILL LAST A LIFETIME



PATENTS NOW PENDING
Both mechanical and design

ELJER China Tank

Same material as bowl with no metal linings to corrode or leak. No wood to open up at joints or become saturated with foul dampness. Extra heavy fittings throughout.

FLJERC

CAMERON
WEST
VIRGINIA

the leading architects and machinery supply houses in that part of the country.

From S. E. Hendricks Company, 74 Lafayette street, New York City: "Hendricks' Commercial Register of the United States for Buyers and Sellers," 1908 Edition, 1,322 pages, 8x10¼ inches, bound in cloth. Price $10. This is the 17th annual edition and it contains nearly 350,000 names and addresses, classified under 33,684 trade headings, each one of which represents the manufacturers of some machine, tool, apparatus, specialty or material. This register covers the architectural, mechanical, engineering, railroad, electrical, mining, iron, steel, export and kindred industries, containing as far as possible complete lists of manufacturers of and dealers in everything employed in the manufacture of material and machinery used in these vast industries, from the raw material to the manufactured article, and from the producer to the consumer. The book covers a vast field, and as it has been compiled with great care, it is bound to be of great value to both buying and selling interests in the many lines it represents.

Shocking Brutality.

"Club Women in Boston," said the head-line.

"Dear, dear," commented the near-sighted man, unable to read the context. "I never would have thought it possible. Why, the very worst we do in Philadelphia is to neglect to give 'em a seat."—Philadelphia Ledger.

"The Campbell"

EXTENSION SINK BRACKET

SAVES $ $

Fits Any Sink

Does away with drilling rim of Sink. Extends under the rim of Sink, around front, holding Sink firmly in place as if in a frame, makes an instantaneous hit with every Sink user.

Order Pair From Your Jobber

TRY IT ON YOUR NEXT JOB

and you will never again use any other method of Sink attachment. Bracket is interchangeable and can be used singly where only one Bracket is used. **"Grips the Sink tightly and never lets go."** You will be glad if you try one—**So will your customer.**

SEND FOR CIRCULAR ANYWAY

CAMPBELL MFG. CO.

GADSDEN, ALABAMA

We make a full line of "Reinforced" Soil Pipe and Fittings.

Domestic Engineering

Published each Saturday by "Domestic Engineering" (Incorporated). Office of publication, 49-53 North Jefferson street, Chicago. Telephone, Main 3254.

Advertising Rates: The rates for advertising will be forwarded upon application. The publisher reserves the right to reject advertising matter of an objectionable nature.

Copy and cuts for advertisements should be received by the last day of the week preceding publication. We cannot guarantee insertion or changes in advertisements if received later.

Terms of Subscription: To subscribers in the United States, $1.00 a year.

To subscribers in Canada and foreign countries within the postal union, $2.00 a year.

Single copies of current issues, 5 cents; copies of back numbers, 10 cents each.

Subscriptions are payable in advance, the regulations of the Post Master General forbidding the extension of credit for subscriptions.

October 10, 1908

CLASSIFIED ADVERTISEMENTS

The rate of advertising under this heading is 10 cents a line an insertion. The average advertisement runs six words to a line. To insure insertion in this column copy should be received not later than Wednesday afternoon.

Help Wanted.

SALESMAN WANTED—ONE FOR St. Louis, one for Chicago; complete plumbing supply line. Address No. 954, "Domestic Engineering," Chicago.

WANTED—FIRST CLASS SALESmen in every locality calling on the plumbing trade to sell an A-1 plumber's tool. Answer, giving territory covered, to Aztec Mfg. Co., 205 Tehama St., San Francisco, Cal.

WANTED—A MAN WHO UNDERstands covering pipes; must be a resident of Chicago; one with business getting ability who wants to go into business. Address No. 952, "Domestic Engineering," Chicago.

JOBBERS! SALESMEN! ARE YOU interested in the sale of the best line of plumbers' brass goods of its kind on the market? Goods staple and active; to be handled as a side line; sales can go through your house. Commission 10 per cent on sales; jobbers salesmen are making $25 to $40 weekly on our line; an excellent proposition. Write at once for particulars. Address No. 950, "Domestic Engineering," Chicago.

WANTED—HIGH GRADE MEN IN every large city in the U. S.; large acquaintance with architects and consulting engineers essential. We give exclusive territory to competent men who can write contracts for our Automatic Steam Vacuum pump (maintains high vacuum on any Steam Heating system with only one ounce of pressure; or as long as there is any fire in the furnace). Automatic Vacuum Pump Company, 121 N. 8th St., St. Louis, Mo.

For Sale.

FOR SALE—A FINE PLUMBING and heating business in town of 12,000 inhabitants within 90 miles of Chicago. Address No. 955, "Domestic Engineering," Chicago.

FOR SALE—PLUMBING AND heating business, good trade, well established. Going abroad account ill health. Address Geo. Ingham, Bronxville, Westchester County, N. Y.

FOR SALE.—GOOD PLUMBING and heating business in thriving town in southern Nebraska. Must sell on account of health. Address No. 947, "Domestic Engineering," Chicago.

FOR SALE.—ONE OF OUR HUNdred horse power Warren Webster feed water heaters, safety valve grease controller, complete; used six months; reasonable. Address M. J. Hawkins, Albany, N. Y.

PLUMBING BUSINESS FOR SALE—In 18,000 Michigan town, old and well established plumbing, heating and electric wiring business; best of reasons for selling. Will require about $5,000.00 capital; a business proposition if you mean business. Address No. 936, "Domestic Engineering," Chicago.

FOR SALE—THE PLUMBING, steam, hot water and gas fitting business of Kuehn & Co., 1807 Farnam St., Omaha, Neb.; valuable business on hand and trade second to none in the city. Inventory and acceptance of existing contracts basis for sale. By order of V. B. Caldwell, executor of estate of Fred G. E. Kuehn.

Agencies Wanted.

EXPERIENCED AND RESPONSIble salesman desires to represent in Chicago manufacturers of plumbers' or steam specialties salable to jobbers, the trade or to consumers; nothing trifling considered; highest references. Address No. 944, Domestic Engineering, Chicago.

Plumbing Schools.

EARN $5 A DAY—LEARN TO BE a plumber in from 4 to 6 months on easy payments. For particulars address Master Plumbers' Trade School, 3402 Lindell Ave., St. Louis, Mo.

BUYERS' READY REFERENCE

Brass Castings.

We are equipped to do your casting in brass, bronze or special metals. Get our prices. McCambridge & Company, Philadelphia, Pa.

Water Closets.

THE R. C. McCLURE CO., SYRAcuse, N. Y. Mfrs. of the very highest grade of Water Closets. Send for booklet.

K. V. A. CLOSET TANKS AND Seats. None better made. Knott-Van Arnam Mfg. Co., Fort Wayne, Ind.

Expansion Bolts.

STAR EXPANSION BOLT CO., 147 Cedar St., New York City. Expansion Bolts in Brass, Iron & Lead. 100 different styles. Any size (¼"-2"). Star Drill Holders and Special Drills. Write for catalog—fully descriptive.

Pipe, Cast Iron.

CHAS. MILLAR & SON CO., UTICA, N. Y. Superior quality Cast Iron Gas and Water Pipe, Cast Iron Soil Pipe and Fittings, Cast Iron Screwed Fittings.

Couplings.

SELL YOUR SURPLUS COUPLINGS and fittings. We buy. Write us. A. & J. Mfg. Co., 26 W. Randolph St., Chicago.

Gas Fixtures.

E. BAGGOT CO., 45-47 EAST LAKE St., Chicago, Ill. Makers of Gas Fixtures and Fittings.

Lighting Fixtures.—Gas only, and Combination Gas and Electric. Send for Catalogue showing complete line at prices you have never before seen quoted. Large stock, ready for immediate shipment. American Brass & Glass Co., 19 La Salle St., Chicago.

Traps, Steam.

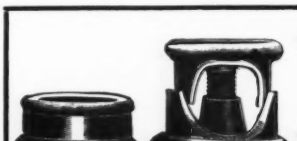
THE ALBANY STEAM TRAP CO., Albany, N. Y. Improved Return Steam Traps. Practicability and efficiency.

Rack Labels

Practical for Plumbers

They are mighty good things, ought to be in every shop. Easily applied to shelves, racks or drawers. Shows what you want at a glance, no more guessing or delayed customers. Not only tells the article but illustrates it. Systematizes and facilitates stock taking, gives a neater and smarter appearance to shops. It's a money saver! Printed on water-proof card in plain readable type. Prices low—prices direct or from F. W. Webb Mfg. Co., Elm St., Boston, Mass.

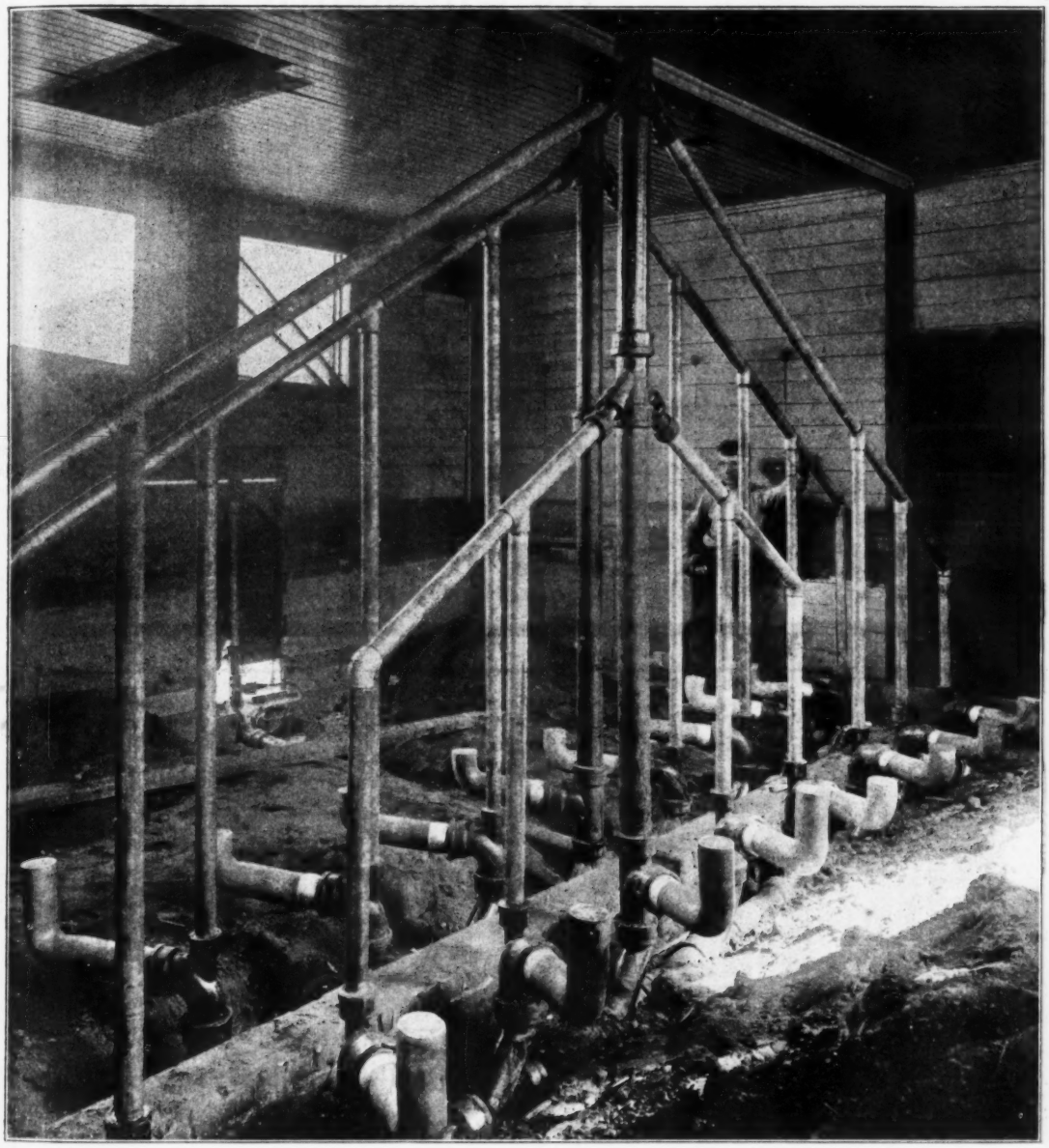
MERCANTILE LABEL CO.
NASHUA, N. H.



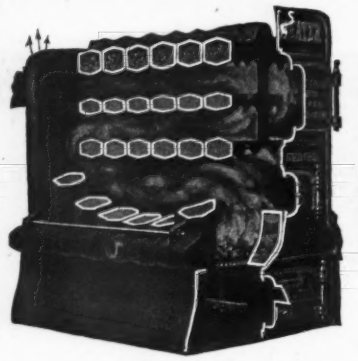
Adjustable Radiator Foot Rest

The time saved on each job pays for them—can be used for bath tubs and other fixtures

The Jennison Company, Fitchburg, Mass.
Sold by Jobbers



Typical roughing-in job of plumbing as it is being done in one of the public school buildings at Pasadena, Cal., to take the place of the old latrine systems which were recently condemned by Plumbing Inspector A. C. Shaver. Water closets of the "Douglas," "Clow" and "Lipp" individual seat-action type and "Clow" ventilated urinals are now being installed under Mr. Shaver's supervision. The trade is asked to criticize this design, and if possible suggest improvements, as Mr. Shaver and the School Board of Pasadena desire to get the most sanitary system.



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"Sunray" Heaters

because they are as dependable as "Old Sol's" heat rays. They are positively the most satisfactory heaters ever built. The "Sunray" Heaters are built for severe service, but when moderate heat is desired they are easily regulated to a medium temperature. Most economical in fuel consumption.

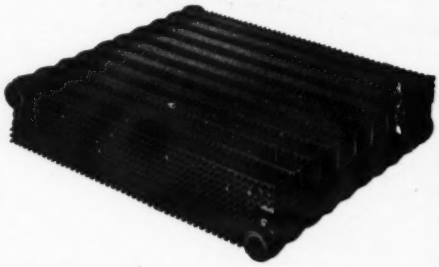
FREE!

THE FITTERS COMPANION

Every enterprising and ambitious Fitter should have our 158-page Book, containing full information on many subjects of interest to every Fitter. It is a ready reference, giving tables used by Fitters, and other valuable information. Send a postal and we will mail it to you **FREE.**

OUR DIRECT FLUE AND INDIRECT RADIATORS

are as good as our heaters and that means the best in the world—absolutely.



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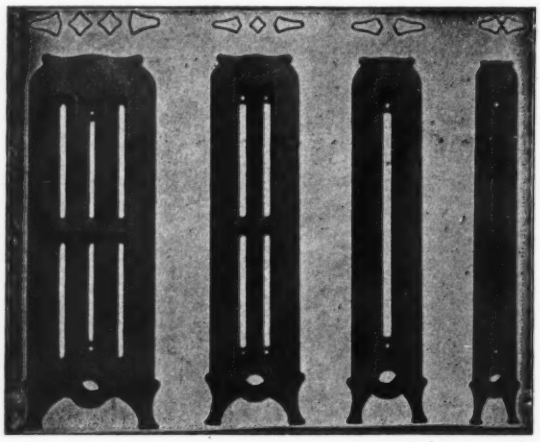
THE J. L. MOTT IRON WORKS

Boston Chicago 5th Avenue and 17th Street, New York Denver San Francisco



If you want the very best installation above the floors use

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A radiator for every space possible. Try it on your next job and be convinced.

UNITED STATES RADIATOR CO.

DUNKIRK, N. Y.

BRANCHES: NEW YORK WASHINGTON CHICAGO MINNEAPOLIS

WAREHOUSES: JERSEY CITY CHICAGO MINNEAPOLIS

THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

DOMESTIC ENGINEERING

PLUMBING HEATING LIGHTING MILL SUPPLIES

Weekly, $1 a Year. Chicago, Saturday, October 17. 1908. Whole No. 827. Vol. XLV. No. 3

The Ventilation of Schoolhouse Toilets—I

By Charles L. Hubbard

Written expressly for "Domestic Engineering." All rights reserved.

One of the important matters to be carefully considered in connection with schoolhouse ventilation is the care of toilets and lavatories.

These are often treated without very much thought by connecting with a flue in which the draft is as likely to be downward as upward. There is no use in connecting a vent duct with a flue unless there is something to produce a draft in the right direction. This may be accomplished by heating the air in the flue or mechanically by the use of a fan. The former is simple, and if heat can be utilized which would otherwise be wasted, it is to be preferred on the ground of economy. In the case of small toilets, the heat required to produce proper ventilation is of minor importance, and a loop of steam pipe within the flue, or a small heater, is usually the best method to employ. In the case of the main toilet rooms in large buildings it is better to use a fan, or at least to provide one for use during certain parts of the day when the toilets are in most frequent use, and on days when the atmosphere is damp and heavy and conditions unfavorable for natural ventilation. A combination of fan and natural draft is often advantageous, the former to be used when necessary, as above described. For average conditions we may use the following general rule with such modifications as seem necessary in any particular case. For small toilets of one to three fixtures a loop of steam pipe may be used in the flue; for larger rooms, of four to eight fixtures, with lavatory, a heater at the base of the flue may be used.

In the case of the main toilet rooms of grammar and small high schools, the combination system of heater and fan is advisable, and in large grammar and high schools where the toilets are in pretty constant use it is best to install an efficient system of fan exhaust and operate it continuously throughout the school session. A simple and effective method of connecting the fixtures with the vent flue is shown in Fig. 1. In this arrangement a space twelve to eighteen inches in depth is closed in by means of marble or slate slabs, and the local vents of the fixtures are connected with this as shown. This chamber, in turn, is connected with a vent flue having the necessary draft to properly ventilate the fixtures.

Sometimes the local vents are connected with the flue by galvanized iron pipes, but the arrangement shown is simple and the closed chamber conceals the plumbing pipes. The joints between the

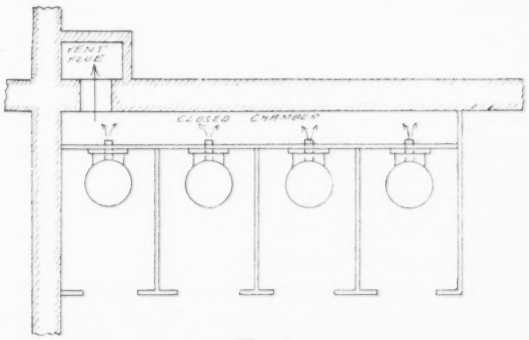


Fig. 1.

slabs of which the space is made need not be airtight, as there should be a certain amount of general or room ventilation which may as well be in part through leakage between the slabs as through a specially provided register. It is best to keep the toilet rooms under a slight vacuum instead of a pressure, as this prevents any escape of odors into other parts of the building. This condition may be secured by providing discharge ventilation only and taking the air supply from adjacent corridors through louvres or grilles in the lower panels of the doors.

It is customary to provide for changing the entire air of the room once in ten minutes. The fixtures are usually given a 4-inch vent which has an area of 12 square inches. A velocity of 200 to 250 feet per minute through these is sufficient, and a lock register making direct connection between the room and the vent duct or flue should be provided to care for the remainder of the ventilation. This may be figured on a basis of 300 feet velocity

was any chance of getting business. Just to test an idea I personally handled the correspondence with him and offered to give him the co-operation of our advertising department in every way that would help him increase his sales for our product. We first suggested that he have his local bill poster put up ten eight-sheet posters that we sent to him, and follow this up immediately with an equal number of three-sheet posters. 'Stickers' were prepared, giving his name as the local agent. Our next suggestion was that we prepare for him the right sort of a form letter, to be typewritten by him on his letter-head, signed by his name with pen and ink and mailed under sealed letter postage to the heads of families he wanted for his customers. We supplied him with plenty of small printed matter that was of the right size to enclose in this letter.

"This man entered into the spirit of our suggestions and put the various ideas into execution with more than ordinary interest. His orders at first were small, but they steadily grew to proportions that were both gratifying to himself and to us, sustaining the conclusions that we had already arrived at as to the benefit of co-operation between manufacturers and the local retailer. We have since learned from this same young man that his plumbing trade has grown in the same proportion that his burner trade has grown, and he is good enough to attribute it all to the development of his burner business.

"What this man has done every plumber in the country can do if he throws a little ginger and gray matter into his efforts. We stand ready to co-operate with him to the best of our ability at all times.

"There are many plumbers who are not now handling an inverted light or a gas burner of any kind. If they can be induced to pause long enough to consider the business-producing possibilities of a line of this character it will be to their real benefit. The inverted burner has come to stay in this country and the next season bids fair to be an 'inverted burner season.'

"America is simply falling into line with Europe in the adoption of the inverted principle of gas lighting. This burner first assumed a practical form in Germany. No invention was ever so quickly adopted as was the inverted gas burner throughout Europe. This was about four years ago. Within a few months the whole continent of Europe took up the subject of inverted gas burners, and put these little money-savers and illumination-givers on chandeliers and gas fixtures. The Alton inverted gas burner about this time invaded America. It was evolved after the German manufacturers had spent fortunes in costly experimentation. The mistakes they had made in employing incorrect principles and expensive methods of manufacture were avoided and the outcome was a burner of much simplicity, effectiveness and inexpensiveness of construction.

"The excellence of the Alton principle of gas lighting is now recognized by everyone, and the upright burner is doomed. 'Domestic Engineering' can do everyone of its readers a genuine benefit by getting them interested in the subject of inverted burners, and particularly in the burner which has already received the sanction and the high encomiums of thousands of homemakers in Greater New York.

"The advantages of inverted burners over upright burners have been so frequently reiterated that there are doubtless few who read "Domestic Engineering who are unacquainted with the desirability of this form of lighting over that heretofore in vogue. In the case of the Alton light a single 'Inverto' gives six times the light of the ordinary gas jet. It can be easily proven that it saves half the gas. This is why the gas companies do not like to handle it, and it is also why the local plumber and gas fitter could handle it to his great individual profit. All the light is thrown downward by the inverted burner, and the light is a bright, white light that is grateful to the eyes. There is no shadow, no flicker, no sputter. They are easy to light and are readily adjusted to any gas fixture. No ceiling protectors, no shades nor reflectors are necessary. A further advantage is the saving of two-thirds the cost of mantles over the old-fashioned upright burners. All these are points that have been testified to by thousands of consumers. It is not likely that all of them are mistaken."

The "Blue Special" House Force Pump.

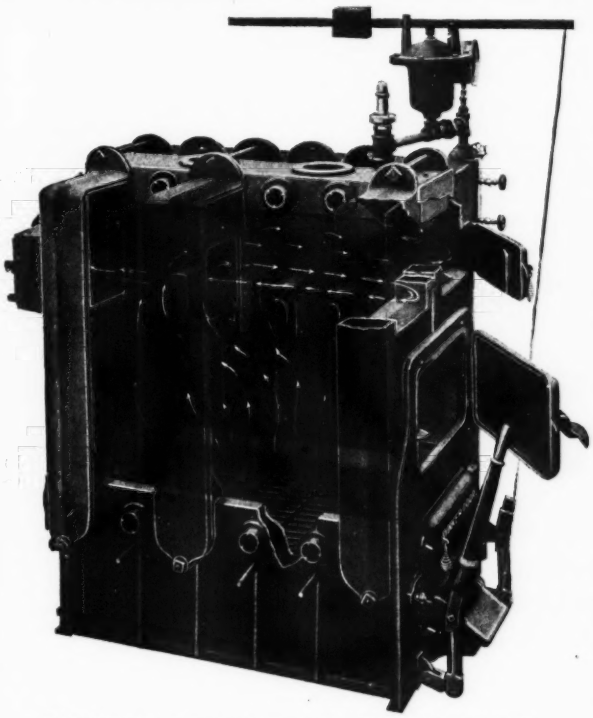
A house force pump that is a departure from the usual pumps of this class is now being manufactured by the Deming Company, of Salem, Ohio. It is built on very graceful lines and it is tastefully decorated in blue and gold, from which it is designated as the "Blue Special." The extra long swinging fulcrum allows it to be operated with a surprisingly small amount of energy and without any noise whatever. The large air chamber and back outlet make it possible to force the water to any part of the house with little effort. A brass tube cylinder, heavy base, long stroke and arrangement of working parts, whereby the upper part of the stock, which is a threaded cap, can be unscrewed, allowing the withdrawal of all working parts are a few of its attractive features. It is also fitted with bibb cock. A post card showing the pump in colors as painted, all ready to ship, also complete details and prices will be forwarded to interested parties upon request to the manufacturer, mentioning "Domestic Engineering."

The Blue Special Pump.

Will Manufacture Automatic Closet Seat Hinge.

W. S. Emery, of 76 Cliff street, New York, N. Y., is placing upon the market a new self-rising or automatic closet seat hinge, which has been named the "Acme." It is constructed of brass, compactly built, and by means of a spring contained in the mechanism, automatically raises the seat to a perpendicular position as soon as it is released. Mr. Emery states that it is his

Improved Capitol Boilers



CAPACITIES: Steam 450 to 1,225 sq. ft. Water 750 to 2,025 sq. ft. Direct Radiation

The Improved Capitol retains the practical merits which have made Capitol Boilers standard in heating efficiency and fuel economy, viz:

Space saving Countersunk Header.

Divided Sections—providing for expansion and contraction, and quick repairs.

Slip nipple construction (no long screws or lock nuts).

And Following New Features:

Height of Improved Capitol—water line 43½ inches (steam); 47½ inches flow openings (water).

Unequaled amount of prime heating surface.

Free waterways—insuring rapid circulation.

Very large fire chamber and deep fire-pot (heavy fire, slow combustion).

Improved grate construction.

Ample ash-pit.

Reduced number of parts—light weight units (economical installation).

We are confident that Improved Capitol Boilers will quickly become popular with the trade and architect, as well as with the general public, by reason of specific and strong practical advantages.

Send for illustrated descriptive detailed literature.

United States Heater Company.

General Offices and Works: Fort St., and Campbell Ave., DETROIT, MICH.

Branches:

DETROIT,	139 Jefferson Avenue
NEW YORK,	129 Worth Street
CHICAGO,	34 Dearborn Street
KANSAS CITY, MO.,	120 W. 11th Street
OMAHA, NEB.,	916 Farnam Street

Sales Agents:

ST. LOUIS, MO.,	L. M. Rumsey Manufacturing Co.
DENVER, COLO.,	Kellogg & Stokes Stove Co.
MINNEAPOLIS, MINN.,	Plumbing & S. F. Supplies Co.
NORFOLK and RICHMOND, VA.,	Virginia-Carolina Supply Co.

intention to sell them in connection with his line of "Everlasting" closet seats and separately.

Will Make a New Valve.

The McNab & Harlin Manufacturing Company, of 56 John street, New York, has added to the line of valves already manufactured by that company a new Jenkins' disc valve, with all parts made interchangeable with other makes, in both globe and angle patterns; also a line of outside screw and yoke iron-body gate valves, both screwed and flanged.

The J. P. White Cistern Filter.

John P. White, of Fremont, Ohio, has just issued a neat sixteen-page booklet illustrating and describing the White cistern filter, which he thinks will stand the closest inspection, not only in regard to the principles employed, but also in regard to its design and construction. Among the many good points enumerated in its favor are the following: The filtering material cannot wash away. The entire cistern is utilized for filtered rain water, and it is never necessary to be without this rain water on account of cleaning the cistern, as the cistern never requires cleaning, and the filter can be cleaned with the cistern full of water. All the leaves and twigs are brought to a point where they easily can be removed. It makes the rain water as clear as crystal and without any disagreeable taste. No screen will be needed on the suction pipe leading to the cistern to prevent the sediment from entering the pump or water lift, as there will be nothing but clean water in the cistern. The attic tank will not serve as a sediment tank after a White cistern filter has been installed, and the sanitary conditions in the bath room, kitchen and laundry will be greatly improved. Plumbers will find this device a most attractive proposition and they should not neglect to get in touch with the manufacturer at the earliest possible moment. A postal card mentioning "Domestic Engineering" and addressed to John P. White, Fremont, O., will bring full particulars.

The J. P. White Cistern Filter.

Patents

899,513. Pump. Joseph H. Champ, Cleveland, Ohio.

899,532. Automatic Relief-Valve. Amos Harrison, Chicago, Ill.

899,568. Drain-Inlet Guard. Andrew J. Shepard, College Corner, Ohio, assignor of one-third to Henry Shepard, Hamilton, Ohio.

899,584. Valve for Gas-Pumps. Richard Whitaker, New Brunswick, N. J., assignor to the Brunswick Refrigerating Company, a corporation of New Jersey.

899,600. Gas-Burner. Frank Krabal, Chicago, Ill.

899,623. Flexible Pipe. George F. Royer, Wilkes-Barre, Pa.

899,657. Hose-Clamp Tool. George E. Burtscher, Chicago, Ill.

899,659. Valve. Lee L. Craddock and John McCleary, Sonora, Tex.

899,673. Soldering Compound. Edmond M. Merrell and Archibald Merrell, Soda Springs, Idaho.

899,768. Automatic Valve. Anton B. Szperkowsky, Berlin, Germany.

899,830. Blow-Off Device for Domestic Boilers. Jacob Manneschmidt, Jr., Brooklyn, N. Y.

899,838 and 899,839. Heating System. Andrew G. Paul, Boston, Mass.

899,910. Grate for the Furnaces of Steam Boilers. Henry Schofield, Sheffield, England.

899,912. Pressure-Regulator. Andrew Schum, Mariah Hill, Ind.

899,932. Pressure-Gage. Eben S. Wheeler, Detroit, Mich.

899,956. Support for Lavatories. Alfred Coons and George Coons, New York, N. Y.

900,012. Range-Boiler. Maurice Gerstein, Chelsea, Mass., assignor of one-third to Heinan Gerstein, Chelsea, Mass., and one-third to Abraham Cooper, South Boston, Mass.

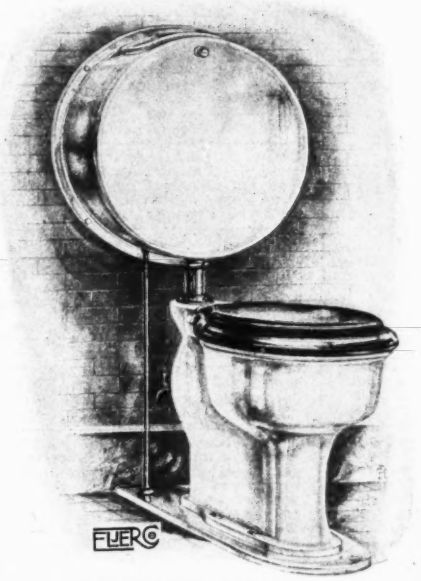
900,071. Water-Closet. Nathan B. Griffith, Philadelphia, Pa., assignor to Keystone Supply and Manufacturing Company, Philadelphia, Pa., a corporation of Pennsylvania.

Trade Literature

From the Louis Lipp Company, of Cincinnati, Ohio: "Superior Sanitary Plumbing Fixtures," Catalogue J, 90 pages, 8½x11 inches, handsomely bound in green cloth with gold stamping. The book is carefully printed on heavy enameled paper and every page bears an imprint of the nameplate of the concern, viz., "The Louis Lipp Company, Cincinnati, Ohio." Its contents are made up of high-grade half-tone engravings with complete descriptions of the company's large lines of enameled iron baths, lavatories, closet combinations, high and low, vitreous china lavatories, pantry sinks and slop sinks, urinals and also plumbers' woodwork and plumbing specialties. The first pages of the book are devoted to excellent views of the company's large factories, foundries and enameling works at Winton Place, a suburb of Cincinnati. Interior views of the wood-working and wood-finishing departments as well as of the enameling rooms and the bath tub foundry are also shown. The company is to be congratulated on this attractive addition to trade literature in the plumbing line.

From Garner Curran, 211 New High street, Los Angeles, Cal: "Western Engineers' and Architects' Gazetteer," 1908 edition, 112 pages, 6x8 inches, bound in cloth; price $5. This directory contains alphabetical list of steam plants, with boiler capacity, names of purchasing agents and engineers in charge, also list of leading gasoline, pumping and other power plants in Arizona and Southern California, and finally a list of

COSTS MORE BUT WILL LAST A LIFETIME



PATENTS NOW PENDING
Both mechanical and design

ELJER China Tank

Same material as bowl with no metal linings to corrode or leak. No wood to open up at joints or become saturated with foul dampness. Extra heavy fittings throughout.

FLJERC

CAMERON
WEST
VIRGINIA

the leading architects and machinery supply houses in that part of the country.

From S. E. Hendricks Company, 74 Lafayette street, New York City: "Hendricks' Commercial Register of the United States for Buyers and Sellers," 1908 Edition, 1,322 pages, 8x10¼ inches, bound in cloth. Price $10. This is the 17th annual edition and it contains nearly 350,000 names and addresses, classified under 33,684 trade headings, each one of which represents the manufacturers of some machine, tool, apparatus, specialty or material. This register covers the architectural, mechanical, engineering, railroad, electrical, mining, iron, steel, export and kindred industries, containing as far as possible complete lists of manufacturers of and dealers in everything employed in the manufacture of material and machinery used in these vast industries, from the raw material to the manufactured article, and from the producer to the consumer. The book covers a vast field, and as it has been compiled with great care, it is bound to be of great value to both buying and selling interests in the many lines it represents.

Shocking Brutality.

"Club Women in Boston," said the head-line.

"Dear, dear," commented the near-sighted man, unable to read the context. "I never would have thought it possible. Why, the very worst we do in Philadelphia is to neglect to give 'em a seat."—Philadelphia Ledger.

"The Campbell"

EXTENSION SINK BRACKET

SAVES $ $

Fits Any Sink

Does away with drilling rim of Sink. Extends under the rim of Sink, around front, holding Sink firmly in place as if in a frame, makes an instantaneous hit with every Sink user.

Order Pair From Your Jobber

TRY IT ON YOUR NEXT JOB

and you will never again use any other method of Sink attachment. Bracket is interchangeable and can be used singly where only one Bracket is used. **"Grips the Sink tightly and never lets go."** You will be glad if you try one—**So will your customer.**

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CAMPBELL MFG. CO.

GADSDEN, ALABAMA

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Domestic Engineering

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Copy and cuts for advertisements should be received by the last day of the week preceding publication. We cannot guarantee insertion or changes in advertisements if received later.

Terms of Subscription: To subscribers in the United States, $1.00 a year.

To subscribers in Canada and foreign countries within the postal union, $2.00 a year.

Single copies of current issues, 5 cents; copies of back numbers, 10 cents each.

Subscriptions are payable in advance, the regulations of the Post Master General forbidding the extension of credit for subscriptions.

October 10, 1908

CLASSIFIED ADVERTISEMENTS

The rate of advertising under this heading is 10 cents a line an insertion. The average advertisement runs six words to a line. To insure insertion in this column copy should be received not later than Wednesday afternoon.

Help Wanted.

SALESMAN WANTED—ONE FOR St. Louis, one for Chicago; complete plumbing supply line. Address No. 954, "Domestic Engineering," Chicago.

WANTED—FIRST CLASS SALESmen in every locality calling on the plumbing trade to sell an A-1 plumber's tool. Answer, giving territory covered, to Aztec Mfg. Co., 205 Tehama St., San Francisco, Cal.

WANTED—A MAN WHO UNDERstands covering pipes; must be a resident of Chicago; one with business getting ability who wants to go into business. Address No. 952, "Domestic Engineering," Chicago.

JOBBERS! SALESMEN! ARE YOU interested in the sale of the best line of plumbers' brass goods of its kind on the market? Goods staple and active; to be handled as a side line; sales can go through your house. Commission 10 per cent on sales; jobbers salesmen are making $25 to $40 weekly on our line; an excellent proposition. Write at once for particulars. Address No. 950, "Domestic Engineering," Chicago.

WANTED—HIGH GRADE MEN IN every large city in the U. S.; large acquaintance with architects and consulting engineers essential. We give exclusive territory to competent men who can write contracts for our Automatic Steam Vacuum pump (maintains high vacuum on any Steam Heating system with only one ounce of pressure; or as long as there is any fire in the furnace). Automatic Vacuum Pump Company, 121 N. 8th St., St. Louis, Mo.

For Sale.

FOR SALE—A FINE PLUMBING and heating business in town of 12,000 inhabitants within 90 miles of Chicago. Address No. 955, "Domestic Engineering," Chicago.

FOR SALE—PLUMBING AND heating business, good trade, well established. Going abroad account ill health. Address Geo. Ingham, Bronxville, Westchester County, N. Y.

FOR SALE.—GOOD PLUMBING and heating business in thriving town in southern Nebraska. Must sell on account of health. Address No. 947, "Domestic Engineering," Chicago.

FOR SALE.—ONE OF OUR HUNdred horse power Warren Webster feed water heaters, safety valve grease controller, complete; used six months; reasonable. Address M. J. Hawkins, Albany, N. Y.

PLUMBING BUSINESS FOR SALE—In 18,000 Michigan town, old and well established plumbing, heating and electric wiring business; best of reasons for selling. Will require about $5,000.00 capital; a business proposition if you mean business. Address No. 936, "Domestic Engineering," Chicago.

FOR SALE—THE PLUMBING, steam, hot water and gas fitting business of Kuehn & Co., 1807 Farnam St., Omaha, Neb.; valuable business on hand and trade second to none in the city. Inventory and acceptance of existing contracts basis for sale. By order of V. B. Caldwell, executor of estate of Fred G. E. Kuehn.

Agencies Wanted.

EXPERIENCED AND RESPONSIble salesman desires to represent in Chicago manufacturers of plumbers' or steam specialties salable to jobbers, the trade or to consumers; nothing trifling considered; highest references. Address No. 944, Domestic Engineering, Chicago.

Plumbing Schools.

EARN $5 A DAY—LEARN TO BE a plumber in from 4 to 6 months on easy payments. For particulars address Master Plumbers' Trade School, 3402 Lindell Ave., St. Louis, Mo.

BUYERS' READY REFERENCE

Brass Castings.

We are equipped to do your casting in brass, bronze or special metals. Get our prices. McCambridge & Company, Philadelphia, Pa.

Water Closets.

THE R. C. McCLURE CO., SYRAcuse, N. Y. Mfrs. of the very highest grade of Water Closets. Send for booklet.

K. V. A. CLOSET TANKS AND Seats. None better made. Knott-Van Arnam Mfg. Co., Fort Wayne, Ind.

Expansion Bolts.

STAR EXPANSION BOLT CO., 147 Cedar St., New York City. Expansion Bolts in Brass, Iron & Lead. 100 different styles. Any size (⅛"-2"). Star Drill Holders and Special Drills. Write for catalog—fully descriptive.

Pipe, Cast Iron.

CHAS. MILLAR & SON CO., UTICA, N. Y. Superior quality Cast Iron Gas and Water Pipe, Cast Iron Soil Pipe and Fittings, Cast Iron Screwed Fittings.

Couplings.

SELL YOUR SURPLUS COUPLINGS and fittings. We buy. Write us. A. & J. Mfg. Co., 26 W. Randolph St., Chicago.

Gas Fixtures.

E. BAGGOT CO., 45-47 EAST LAKE St., Chicago, Ill. Makers of Gas Fixtures and Fittings.

Lighting Fixtures.—Gas only, and Combination Gas and Electric. Send for Catalogue showing complete line at prices you have never before seen quoted. Large stock, ready for immediate shipment. American Brass & Glass Co., 19 La Salle St., Chicago.

Traps, Steam.

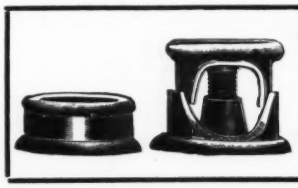
THE ALBANY STEAM TRAP CO., Albany, N. Y. Improved Return Steam Traps. Practicability and efficiency.

Rack Labels

Practical for Plumbers

They are mighty good things, ought to be in every shop. Easily applied to shelves, racks or drawers. Shows what you want at a glance, no more guessing or delayed customers. Not only tells the article but illustrates it. Systematizes and facilitates stock taking, gives a neater and smarter appearance to shops. It's a money saver! Printed on water-proof card in plain readable type. Prices low—prices direct or from F. W. Webb Mfg. Co., Elm St., Boston, Mass.

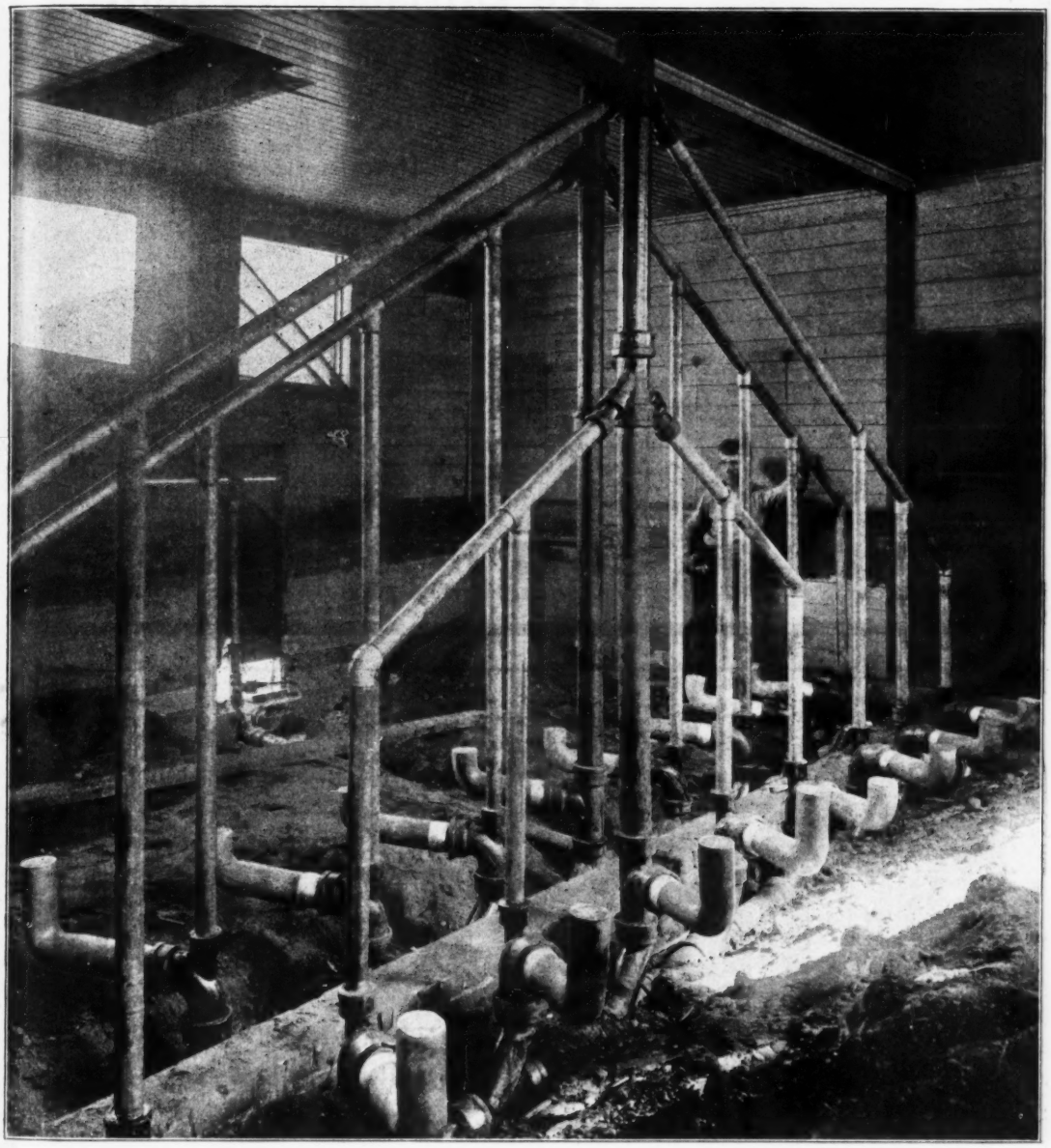
MERCANTILE LABEL CO.
NASHUA, N. H.



Adjustable Radiator Foot Rest

The time saved on each job pays for them—can be used for bath tubs and other fixtures

The Jennison Company, Fitchburg, Mass.
Sold by Jobbers



Typical roughing-in job of plumbing as it is being done in one of the public school buildings at Pasadena, Cal., to take the place of the old latrine systems which were recently condemned by Plumbing Inspector A. C. Shaver. Water closets of the "Douglas," "Clow" and "Lipp" individual seat-action type and "Clow" ventilated urinals are now being installed under Mr. Shaver's supervision. The trade is asked to criticize this design, and if possible suggest improvements, as Mr. Shaver and the School Board of Pasadena desire to get the most sanitary system.

We Christened Them

"Sunray" Heaters

because they are as dependable as "Old Sol's" heat rays. They are positively the most satisfactory heaters ever built. The "Sunray" Heaters are built for severe service, but when moderate heat is desired they are easily regulated to a medium temperature. Most economical in fuel consumption.

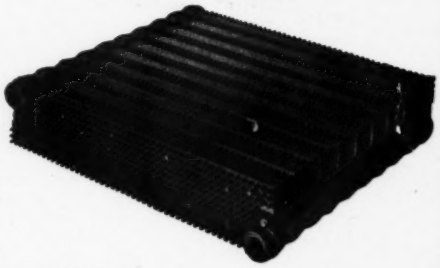
FREE!

THE FITTERS COMPANION

Every enterprising and ambitious Fitter should have our 158-page Book, containing full information on many subjects of interest to every Fitter. It is a ready reference, giving tables used by Fitters, and other valuable information. Send a postal and we will mail it to you **FREE.**

OUR DIRECT FLUE AND INDIRECT RADIATORS

are as good as our heaters and that means the best in the world—absolutely.



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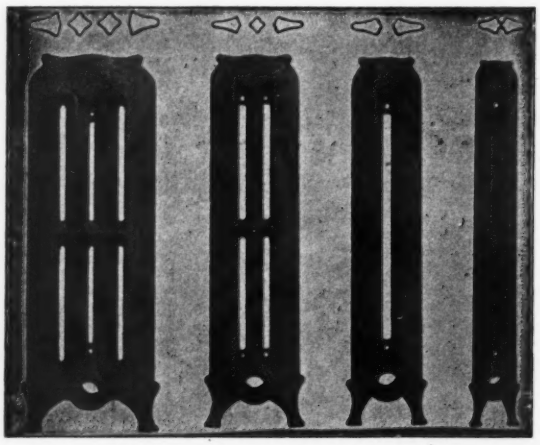

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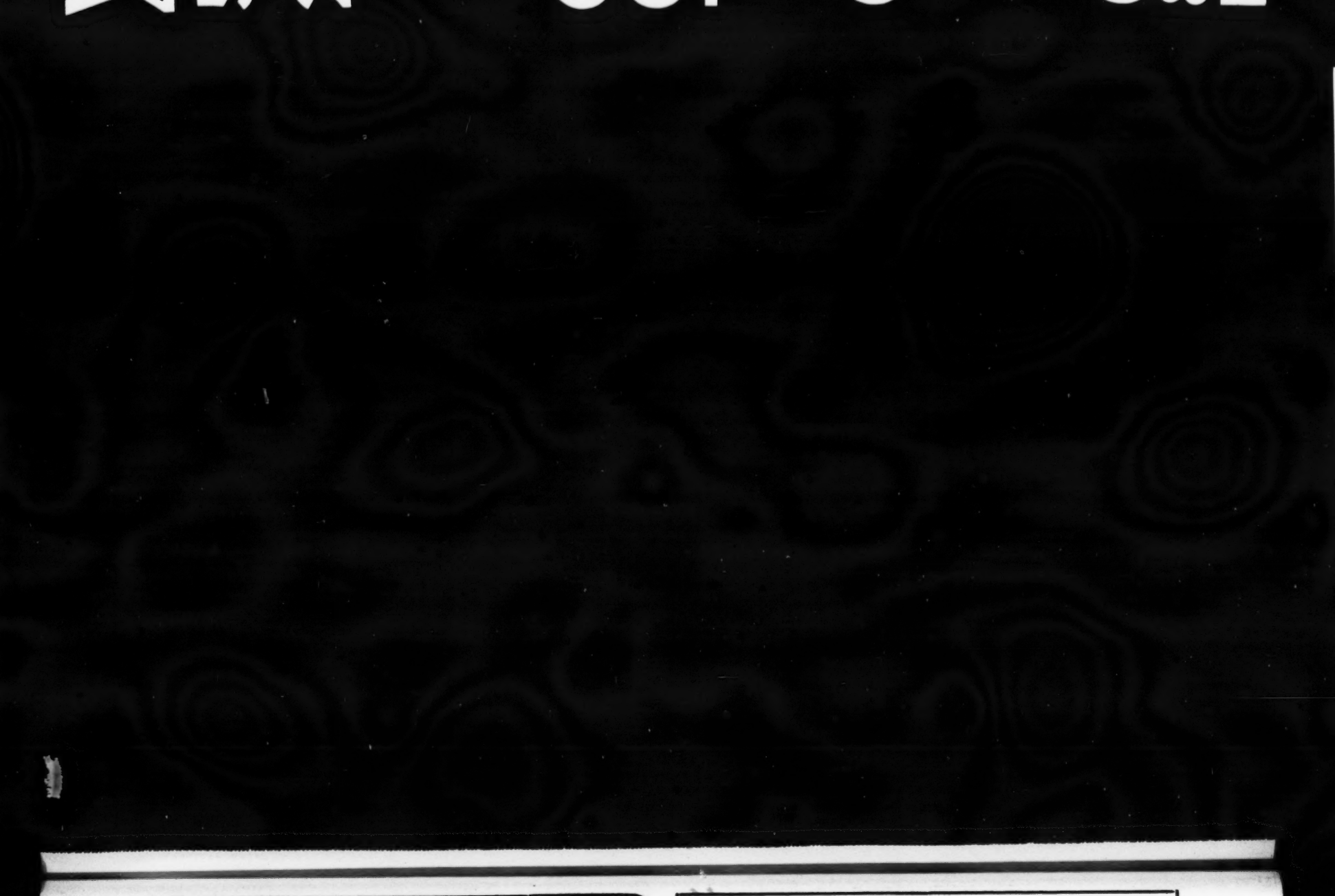
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